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Surplus of Trained Teachers a Menace to Salaries and Standards

Undiminished output of inexperienced teachers, return of teachers from other occupational groups and reduction of employed teachers will, if continued, destroy the recent progress in teacher training

By PAUL C. STETSON, Superintendent of Schools, Indianapolis and President, Department of Superintendence

CONTINUANCE of the financial depression has forced public school administrators into new relationships with established educational organizations. No one of these relationships is more important, has wider implications and presents greater difficulties than that between public schools and teacher training institutions.

We had assumed that this relationship was well established and permanent. It was apparently a simple one. The public schools consumed the product of the teacher training schools. The nature of the training of this product was determined in part by the program of the public schools, in part by state legislation and in part by the educational policies of the teacher training institutions.

The general situation, as late as 1931, with necessary exceptions in certain communities, may be summed up as follows: Superintendents of schools, as supervisors of instruction, accepted the policy that teacher training could best be carried on in institutions specifically designed for that purpose; that state laws should place the certification of teachers in the hands of the state departments of education; that both teacher training schools and stringent certification requirements would raise the level of the quality of prospective teachers, and that as a result not only would teaching be improved, but the salaries of teachers as a group would rise.

Superintendents also acquiesced in the suggestions of teacher training institutions that they should guide their best students into teaching and should make sure, if possible, that they took their vocational courses in teacher training institutions. On the whole, this attitude of superintendents toward the problem of teacher training was justified by the results achieved. The quality of prospective teachers was higher, salaries were raised and enrollment in teachers' colleges was greatly increased.

Three winters of financial discontent have materially changed this situation. Our efforts of the last decade to increase the quality and the number of teachers have borne so great a harvest that there is now a definitely acknowledged surplus of teachers. It is beside the point to attempt to evade the problem by saying that there is never an oversupply of superior teachers. The fact remains, and its truth is forcibly brought home to superintendents every day, that there is a surplus of available teachers.

The extent of the excess of teachers over the demand is difficult to estimate accurately. The

total number of teachers who completed training in 1929 was 93,334, according to a study reported in the November, 1931, issue of the *Research Bulletin of the National Education Association.* To this must be added 29,000 others who qualified for teaching that year by examination or by some other method, making a total of 122,000 available teachers. At the same time a demand for 70,000 new teachers was reported from all the states. Therefore, in 1930, before the depression had really affected public schools generally, we had a surplus of approximately 50,000 trained teachers.

Former Teachers Returning to the Fold

The number of normal schools, denominational colleges and universities offering training for teachers has more than doubled in the last decade, whereas the demand for teachers has fallen off rapidly in the last three years. If this study had been made in the summer of 1932 a much larger number of teachers in excess of the demand would have been reported.

Not only are training schools preparing more students every year than can possibly be absorbed, but the ranks of the unemployed teachers are swelled from at least two other sources.

Teachers who left school work during the prosperous era to work in various capacities in public, semipublic and private business institutions now find themselves unemployed. Thousands of teachers, attracted by larger salaries, better working conditions and chances for advancement, resigned their teaching positions to enter educational and welfare departments in large factories and department stores. Most of these departments have been closed. These two groups of former teachers are asking reinstatement in the public schools. Any community has a considerable number of them.

Another reason why the ranks of unemployed teachers are growing is the fact that budget retrenchments have forced large and small public school systems all over the United States to reduce rather than to increase the number of teaching positions. No figures are available on the number of teachers thrown out of positions in this way but it must be considerable.

Three factors, then—undiminished, continued output of inexperienced teachers from teacher training institutions, return of teachers from other occupational groups, and reduction of the number of employed teachers—have created a situation whose effects are as serious as they are broad. Effects on standards for entering teaching and upon salary schedules deserve our immediate attention.

A continuance of the present situation will mean inevitable destruction of salary schedules. It is a universal economic law that wages rise and fall in response to the supply of workers in relation to the demand for their services. If the present situation continues we shall have a teaching wage lower than the economic fair wage because more persons will be offering teaching service than are needed in the occupation.

"No discrepant wage exists without real causes," says Dix in The Economic Basis for the Teacher's Wage. "The way to bring wages into line with the demands of the criterion of maximum dividend is to set in motion by intelligent controls and planning economic forces that will themselves bring the wage to its proper position."

Unemployed teachers are perfectly willing to break through any established salary schedule in order to obtain work. Every superintendent has had experiences with teachers who will teach for less than the minimum wage set up in any salary schedule. The pressure of this great group of teachers will soon break through an established wage and will destroy the results of years of effort to obtain and maintain fair salaries for teachers.

Hand in hand with this pressure upon existing salary schedules is that upon existing requirements for certification of teachers. Pressure is being exerted to put an end to the only control states have over the quality of candidates for teaching positions. This will mean not only breaking down of existing standards and lowering of the quality of those seeking teaching positions, but a tremendous increase in the number of applicants. If salary schedules are to be maintained on any reasonable level and existing standards for the preparation and certification of teachers are to be retained, immediate and intelligent action must be taken.

Training Schools Must Not Be Closed

It is difficult to propose solutions to this problem of the oversupply of teachers. Better business conditions may relieve the situation somewhat, but unless some unforeseen national emergency arises, it will be many years before the present output of teacher training schools can be absorbed.

One solution, too frequently suggested, is that many training schools should be closed for at least two years. This would not deserve mention were it not for the fact that bills seeking to accomplish this end have recently been presented to several state legislatures. This is not a real solution of the problem. State and private institutions represent too great an investment to be allowed to stand idle. Closing the teacher training institutions would only aggravate the problem of unemployment since a large number of professors and instructors would be forced to seek positions

elsewhere. One of the most serious effects of such a policy, however, would be cessation of the rapid progress being made in revision of courses of study and reconstruction of teaching techniques. Most teacher training schools have provision for in-service training which should be continued regardless of financial depression. The plan to close teacher training schools should be dismissed as unwise, uneconomical and impracticable.

Certain steps, however, should be taken immediately to meet this crisis. The time is ripe to raise standards for admission to and graduation from teacher training schools. An illogical by-product of the times has been a growing insistence that standards, already too low, should be further lowered. Teacher training schools should raise the standards for admission to the point where only those who seem reasonably sure of successfully completing the course would be admitted. This sort of control is effectively operated by the better legal and medical schools. Admission requirements should be made stringent enough to reduce by at least two-thirds the number of applicants accepted. Regulations relative to the graduation of students should be strict enough to reduce materially the number of graduates.

Statewide Planning Is Needed

"In the interest of increasing the size of individual training schools throughout the country," to quote Dix again, "candidates have until recently been all but dragooned into these schools. At the same time training schools have multiplied in number. No central organization has attempted to learn all the facts and place them before the country as a whole and before those responsible for the supply of trained teachers."

In the best interests of both the public schools and the training schools this situation no longer should be allowed to exist.

Another suggestion is that some central agency, such as the state department of education, should make an annual survey of the probable demand for trained teachers. After this demand is determined, the number of candidates admitted to teacher training institutions could be limited accordingly. Possibly an agreement could be reached, through some voluntary association of all teacher training agencies, whereby an allotment of candidates for teacher training could be made to each accredited institution. To go on blindly as we are now doing without intelligent statewide planning is to invite destruction of our program of teacher training.

Finally, each state should set up a fact finding committee composed of representatives of all publicly and privately maintained teacher training institutions, the state department of education and the public schools, to the end that through intelligent planning the crisis in public education may not result in destruction of the progress made in teacher training in the last quarter of a century. Only by united and cooperative effort can this destruction be averted.

Is the Junior High School Superior to the Eight-Four Plan?

"Data gathered in connection with the National Survey of Secondary Education have allowed a comparison of the organization of a large group of junior high schools with the organization of corresponding grades in schools under the eight-four system," says F. T. Spaulding, associate professor of education, Harvard University, and head specialist in school organization, National Survey of Secondary Education. "Both types of schools display great variety in their internal organizations; the data seem, however, to justify the following conclusions:

"First, the typical junior high school offers only a limited number of the varied adjustments to pupils' needs which have been urged by active proponents of such schools. Emphasis has apparently been more directly placed on the development of the extracurricular program than on any other major feature of organization. Adoption of a comprehensive guidance program, use of reliable measures of ability and achievement and provision for the special needs of the brighter pupils seem to have received too little attention.

"Second, the organization of the typical junior high school probably compares favorably, nevertheless, with that of the corresponding grades in representative unreorganized schools. Reorganization has apparently brought about a definite extension of arrangements for articulation; the guidance program in the ninth grade of the typical junior high school is more comprehensive than the guidance program in the ninth grade of the four-year high school; reorganization has produced an opportunity for the election of courses in the seventh and eighth grades which is entirely lacking in the typical elementary school.

"Third, the movement for reorganization has probably affected the organization of conventional schools in such a way as to lessen the differences between the supposedly 'traditional' organization and newer types of organization.

"Further data to which the survey is giving special attention seem likely to permit eventual conclusions on various types of reorganized schools."

Massive Pillars *add dignity and impressiveness to main entrance of the Abraham Lincoln Junior High School, Rockford, Ill. The school has an enrollment of approximately 1,800 pupils.*

Today's Program in Health Education—and Tomorrow's

Rye High School has devised a physical education program that is producing great results. There are three phases in the program—health education, corrective work and outdoor recreation

By PERLEY W. LANE, Supervising Principal, Rye High School, Rye, N. Y.

THE public, boards of education, school administrators, physical education experts themselves, have not yet demonstrated that they believe in a sound body. Upward of four million boys and girls have not yet been convinced that health and exercise are of great importance in their lives. Taxpayers everywhere have poured their dollars into an educational activity dedicated to sore muscles and dumb-bell "one-two-three-fours." Nothing in the schools is so truly opposed to democracy as the system of physical education where the athlete and the team justify the whole program while the rest of the pupils are simply spectators.

With few exceptions, the usual requirement for physical education in the high school is, to use the favorite expression, "a period or two of gym." These periods are schedule "spares" in order not to interrupt the even tenor of algebra, Latin or typewriting. Within forty-five minutes pupils undress and dress, go and come, bathe or do not bathe, and carry on some form of exercise. Generally the gymnasium is preferred to the open air. Ordinarily the program is of the lockstep sort which would do credit to a prison régime.

Let us imagine that an opportunity to organize and direct an ideal program presents itself. What would you, as a school superintendent, suggest?

What would you support? What would you visualize?

First, (and may we not be practical?) you would require exercise every day. Is there any sensible argument opposed to this principle? What of your own experience with intermittent exercise? Is it painful or valuable? Furthermore, can you properly recommend Greek or commercial arithmetic daily and exercise almost never?

Second, you would encourage exercise in social groups. Do you prefer to go to the gymnasium alone or to join a business men's class? Does your boy coast alone, hike alone or swim alone? Is your golf a onesome?

Third, you would build a schoolhouse with facilities. Isn't it true that all programs are based upon facilities? You would require, would you not, facilities sufficient for all? You would need whatever lends itself to variety, interest and results.

Fourth, you would secure progressive directors. The implication of your ideal program is obvious. As in all endeavors, the disciple and the worker must, in their turn, lead other disciples and other workers.

Fifth, you would have an enlightened board of education. The most vital requirement is a wise and sympathetic board. It must be an enlightened group in the truest sense, to guarantee success.

Sixth, you would require an understanding community. But the community cannot of itself be understanding. It is your plan, explained by you, that leads to an intelligent attitude in a community.

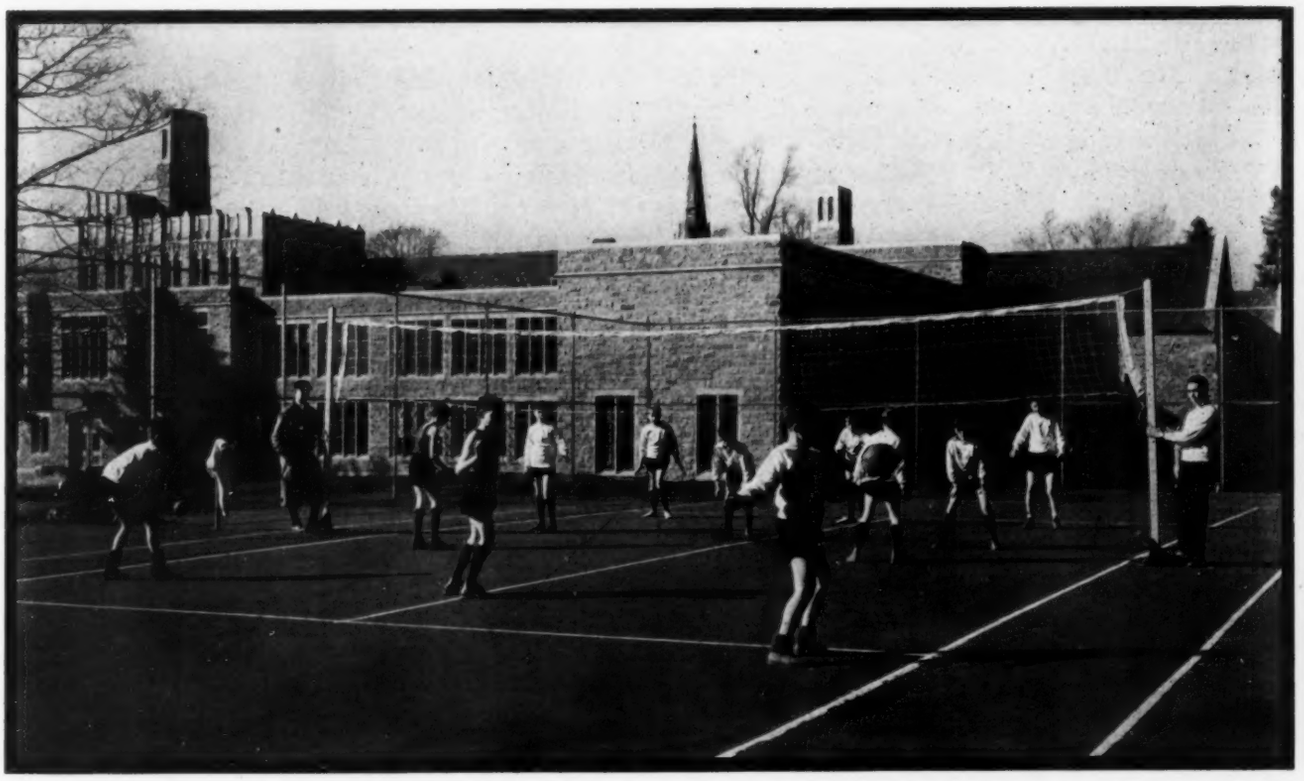
Seventh, you would seek the cooperation of all related agencies. Physical education involves preventive medicine, expert advice, health, physicians, dentists and nurses.

Program Has Three Bases

There are three bases in the physical education program at the Rye High School. First, the recreative aspect. Every boy and girl engages in games and exercise for fun. Therefore, this phase of the program includes the following provisions: the association of pupils of similar age; instructors and leaders for all; a taste of several sports, recreative and rotating—today archery, next week soccer, next month volley ball; fifteen or twenty sports and games; required exercise daily for all pupils from 2:30 until 3:45 p.m.; school uniforms at cost for all who find this convenient; class leagues; interclass games; exercise outdoors, weather permitting.

Second, the individual corrective phase. Every boy and girl is apt to have a physical handicap of some kind. Therefore, it is the aim of this phase of the program to determine: wherein is John

A corner of the field house. This remodeled building was once an old garage. More than 500 lockers, shower facilities and team rooms are now contained in it.



A group of boys using a tennis court for volley ball. The boy at the extreme right is a leader and manages the game as the director, on the left, drops in to watch progress.

weak; what of his posture, his carriage, his general physical set-up; how are his feet; how does he compare with other boys of his own age; does he need individual exercise to correct an individual fault; what of his height and weight? In developing this phase of the program, corrective exercise in the corrective gymnasium is required. The parents are informed of these individual cases, strengthening exercises are suggested and an attempt is made to enlist the help of the home.

Third, the health phase. Questions of health in most schools are likely to be routine questions. Therefore, the rather unusual procedure of enlisting the interest of the doctors themselves was adopted. Three-quarters of the physicians in the city volunteered to act as an advisory body without remuneration, to the end that all examinations, all questions concerning forms, all details regarding the proper use of the school's clinic be settled by those most familiar with health problems. The result of this study will give Rye an efficient health program. There will also accrue the value that comes from a concerted interest in questions of health on the part of a community's physicians.

Perhaps the recreative phase of the program requires the most skillful planning. When 650 pupils are released on play fields, there is every chance for confusion and educational waste. We do not take any chance in this connection, for about twenty of the regular teachers lend a hand, together with forty pupil leaders. These teachers are not experts. They are merely persons who had evinced a taste for sports during their undergraduate days and who still enjoy exercise.

On Monday, for example, sixteen divisions of girls are at play engaged in different activities. The school is separated into four major groups and each group is arranged in divisions of about fifteen pupils each. Every girl knows her activity as does every teacher and leader.

There are many sports for the boys, including track, football, touch football, gymnastics, soccer, baseball, indoor and outdoor basketball, quoits, cross-country, tennis and volley ball.

Many other activities are available, such as riding, golf, clog dancing and folk dancing. The program is never complete. It is always flexible, and depends upon the demand and the instructional facilities.

The Rainy Weather Problem

The rainy day and inclement weather bugaboo will probably worry the school executive who is inexperienced in this type of program. Why should it? Even if the pupils are dismissed in adverse weather, the value of this type of program far exceeds that of the older types. This program not only meets the requirements of every state in the Union, but goes far beyond such requirements. It is interesting to note that from January 11, 1932,

until the close of the school year, the exercise days at the Rye High School numbered four out of a possible five. These figures should answer the inclement weather question, for Rye is north of New York City, and on the Atlantic coast.

There are many substitutions to compensate for rainy or inclement weather, such as organized cheering, indoor interclass games, movies that emphasize sports, group singing, club meetings, elections, dancing, chess, checkers and ping pong tournaments. The possibilities are as numerous and the ingenuity and imagination of the physical education directors are quick to take advantage of them.

What Is the Technique?

There are two other matters that might be expected to cause trouble, but as a matter of fact, they never do. I refer to the attitude of the teachers and of the parents. The teachers enjoy the supervision work, and the parents are highly in favor of a physical education program that eliminates idleness common to street corners and downy couches. It is never necessary to include physical education duties in a teacher's contract. Parents rarely attempt to have their children excused from the program.

The individual corrective phase of physical education is undoubtedly the one most seriously neglected in many schools. There are various reasons for this situation. Lack of time or lack of facilities frequently results in no attention being given to individuals, and ignorance or lack of interest on the part of the directors themselves often brings about the negligence. Overemphasis on athletics is also a contributing cause. Yet no phase of physical education is more important than that of correcting individual problems.

One of the good results of a program of exercise for all pupils at the same time is that the entire school day is thus released for corrective work. Physical education for all is scheduled in a period by itself when all other activities cease; pupils in need of corrective work are assigned to corrective classes during the free periods in their schedules. A judicious use of spare periods provides ample time for this work and the plan lends itself to small groups.

Nevertheless, there are problems to be met. What should be corrected? How are the problem pupils to become known? What is the status of a corrective case in the program as a whole? What, in short, is the technique?

An orthopedic examination is made of each pupil in the school. The form is simple and may be changed at any time. The following items are covered: round shoulders (kyphosis), hollow back (lordosis), curvature of the spine (scoliosis), prominent shoulder blades (scapulæ), abdomen, head position, pelvic girdle, muscular and tendon conditions and feet.

If a pupil is found deficient, corrective work is begun immediately, either in school or at home. Many corrective cases are temporary or slight, and often are due to a sluggish condition, a recent illness or fatigue. Home exercises, such as the corner exercise, bicycle riding, the wall posture exercise or the broomstick device are usually sufficient to bring a cure.

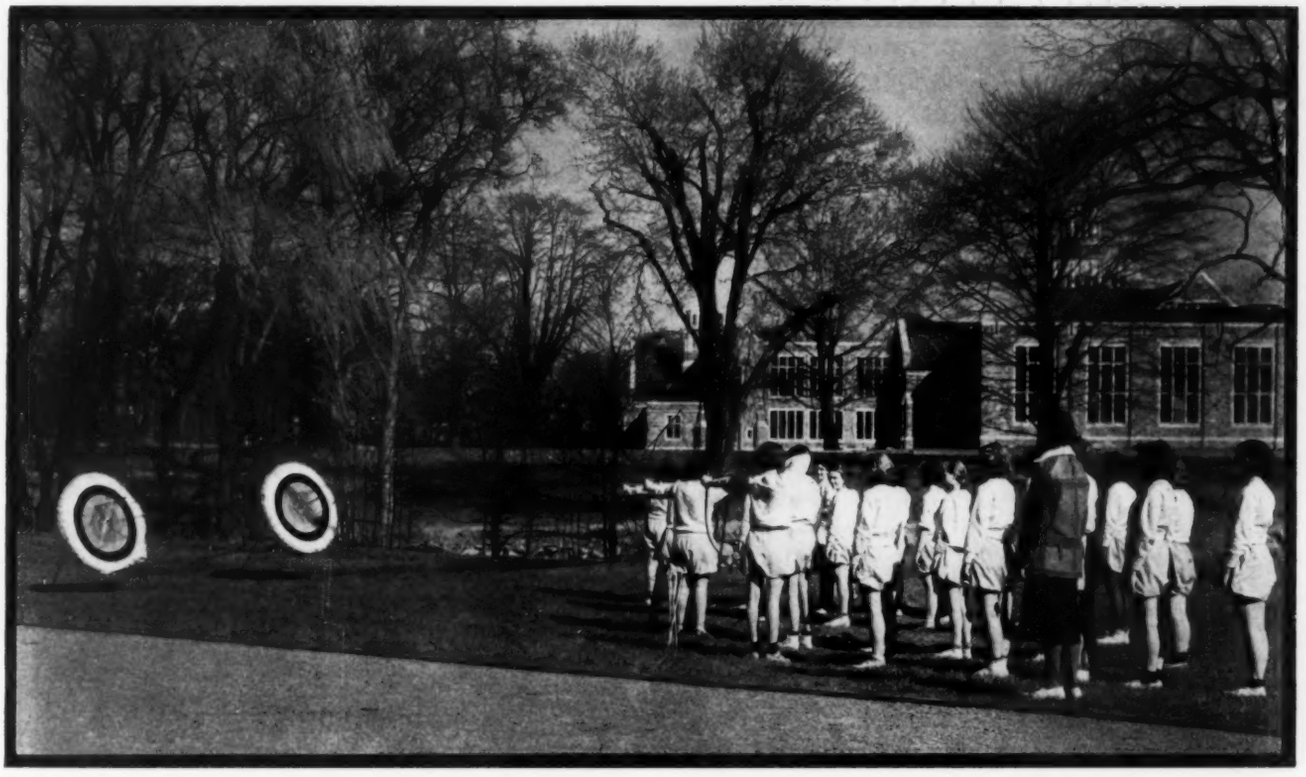
The Rogers Physical Fitness Tests are used and have been found helpful. The tests measure the physical capacity of a pupil. The tests include these factors: age, weight and height; pull-ups and push-ups; arm strength through leg lift, back lift and hand grips; lung capacity. The tools required are as follows: a spirometer, a manometer, a dynamometer, bars for push-ups, rings or bars for pull-ups, a stall bar bench and scales for weight and height. The results in tests will range from 30 to 180. Two adults, with some assistance, can test about sixty pupils an hour.

The third phase of the physical education program concerns health. In some ways this is the most difficult phase, since it is so often true that vigilance and efficiency are swallowed up in mere inspection and routine.

The first difficulty that had to be overcome was to prevent health questions from being pigeonholed. The second problem was to discover a suitable technique. The third problem was to determine what amount would represent a proper financial outlay for health. Finally, there was the matter of relating the health measures to the physical education program. I should like to remind the superintendent who is contemplating a school program devoted to physical well-being that the health phase will require a great deal of thought and experiment. Positive measures in the field of health involve many agencies, such as ques-

CORRECTIVE RESULTS OF THE PHYSICAL EDUCATION PROGRAM AMONG THE GIRL PUPILS

	November	*June*	
	Before Correctives	*Improved*	*Corrected*
Overweight	31 per cent	9.4 per cent	.....
Underweight	11 per cent	2.3 per cent	.....
Round Shoulders	52 per cent	8.5 per cent	16.5 per cent
Hollow Back	27 per cent	3.5 per cent	11.3 per cent
Spinal Curvatures	14 per cent	1.5 per cent	2.5 per cent
Prominent Abdomen	11 per cent	3.1 per cent	3.9 per cent
Forward Head	47 per cent	5.4 per cent	21.1 per cent
Flat Feet	38 per cent	5.4 per cent	7.0 per cent



Girls engaged in archery. The instructor is Helen E. Knapp, a teacher of English, who became interested in archery after coming to Rye.

tions of propriety, school and home prerogatives, numerous "campaigns," particular facilities, teachers, schedules and large doses of common sense.

A letter was sent to all the physicians in the city asking each to give a small part of his time for one year, without remuneration, to medical inspection work among the boy pupils. Of the ten men and one woman to whom the letter was sent, seven men and the woman volunteered their services gratis. We arranged that the work of examinations be shared, we cooperated with the physicians in the allocation of the time at their disposal and we provided an examination form with numerous questions.

A part-time dental hygienist was secured who completed oral examinations of all the pupils. No attempt was made to perform dental work beyond cleaning and temporary fillings.

What are the results of the three-phase program? Unlike the teaching of a school subject that offers definite opportunities for a fairly accurate measurement of a pupil's progress, the operation of a physical education program is almost nebulous in its implications of cause and effect. Who can tell, for example, just how much good effect can be charged to fresh air, to morale, to pupil leaders, to facilities, to correctives, to social opportunities, to directors, to teachers or to regularity? Nevertheless, it is possible to present the results we found and attribute them to the program as a whole.

As a result of our relatively short experience we have reached the following conclusions concerning the recreative phase of the program: (1) daily exercise for all pupils at one time is practical; (2) the program places no unfair burden on the staff; (3) a school attendance record of 95.26 per cent indicates a healthy school; (4) this type of program evokes no complaints from parents or from pupils; (5) experience with fifteen or twenty sports fits pupils for future recreation; (6) satisfactory weather conditions can be depended upon about four-fifths of the time; (7) teachers have added opportunity for valuable contacts with pupils during play field and dressing room periods; (8) the development of such qualities as courage, initiative, self-control, patience, fair play and cooperation, to name a few, receive a distinct impetus through the program; (9) a greater use is made of the school plant; (10) emphasis on athletics is removed; (11) no great financial outlay is required.

There are certain factors concerning the figures in the accompanying table that should be explained. Overweight is not an undesirable condition in a growing girl and, therefore, was not stressed in the correctives. Underweight is common among adolescents. Spinal conditions are frequently matters for the attention of physicians. Physical education directors should move carefully in this field. Forward head conditions are often due to

poor eyesight. More girls than boys have unfavorable feet conditions. Girls' shoes are often cheap, poorly made, dictated by style and at cross purposes with anatomical requirements.

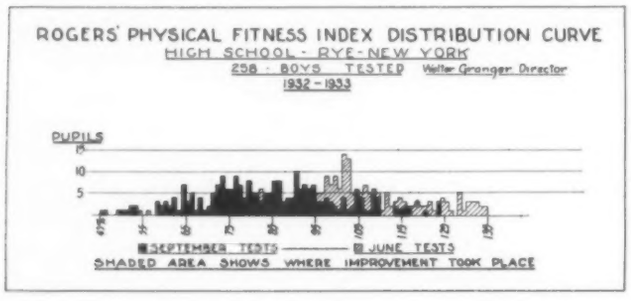
Only 13.3 per cent of 256 girls were found to be without defects; 65.6 per cent of the girls were asked to give attention to minor defects, and 21.1 per cent of the girls received regular correctives at least twice each week in the corrective gymnasium.

Among the fifty-four girls who formed the regular corrective class, the following results were obtained from six months of work: 48 per cent of those who presented forward head conditions were corrected, and 22 per cent were improved; half of the flat feet conditions were corrected and half were improved; 22 per cent of the round shoulder cases were corrected, 20 per cent remained stationary and 22 per cent were improved; all of the spinal cases showed improvement; 22 per cent of those with hollow back conditions were corrected and 18 per cent showed improvement; all of the prominent abdomen cases resulted in correction.

Examination in November disclosed 51 pupils requiring foot correctives. Of this number 9 pupils completely reeducated their arches and were discharged; 10 pupils showed marked improvement; 12 pupils showed slight improvement; 9 pupils showed no improvement, and 11 pupils failed to give the program a fair trial.

Fifty-nine pupils were found to need orthocorrective attention. Of these, 28 were entirely corrected; 24 showed marked improvement, and 7 showed little if any improvement.

What transpired in those skills included in the Rogers Physical Fitness Tests is told in the accompanying chart. It should be remembered that results must be credited to all three phases of the program. The improvement indicated is remarkable.



The girls are placed on a point system in order to increase their interest. This plan is flexible and may be changed. During the last year a blazer was awarded to the girl who received the greatest number of points.

The boys have the opportunity to engage in the following organized athletics: baseball, track, golf, football and basketball. Sixty-seven school letters were awarded to boys and girls. The Robin Hood interclass track meet, a commencement event, involved eighty boys and ninety-one girls. A total of seventy-one boys took part in the interclass tugs of war. The schools eligibility rules are definite and closely observed.

Pupil leaders take attendance, supervise and referee games and carry on many details involving the various activities. Their assistance is invaluable.

Out of the genuine laughter on the play fields, out of a certainty of recreative information imparted, out of the bequeathing of tools and aptitudes which will simplify and cheer life beyond the classroom, must come the conviction that harmony is a union of soul and mind and body. Nature is kind when proper use is made of it. American school masters will do well to remember this. The gym period squeezed into "spares" is practically useless.

How to Equalize Salaries Despite Reductions in Budget

Years of college or equivalent training, years of experience, administrative responsibility, research ability and an excellent record for service will compose the basic consideration for salary in the public schools of Hope, N. Mex., beginning with the coming school year, according to Irvin P. Murphy, superintendent of schools. The new program indicates the effort that is being made to recognize teachers' worth to the system and to place the salary scale on a scientific basis.

A scale is so arranged that a teacher receives automatically a stipulated amount for given years of training and certain years of experience. To this figure is added a potential 25 per cent for principals who are responsible for administrative work. If a teacher's worth to the system surpasses the salary allowed, she may in addition receive an unstipulated percentage of her salary for research work, if capable, or for other meritorious services. Another desirable increase is that of 8 per cent of her salary by the scale for an excellent record in service. This amount is given only to teachers who excel, according to the judgment of a rating committee, in such things as extracurricular leadership, teaching load, personality and initiative.

The plan is being accepted enthusiastically despite the fact that teachers in the high school suffer a reduction. The most drastic change is that elementary school teachers may be rewarded without advancement to the secondary school.

Mental Age Is Important Factor in Teaching Arithmetic

Studies over a period of years indicate that there are certain mental ages at which pupils may be expected to learn any given mathematics topic with reasonable efficiency

By RAYMOND W. OSBORNE, Assistant Principal, Francis W. Parker School, Chicago, and HARRY O. GILLET, Principal, University of Chicago Elementary School

DESPITE the progress that has been made in elementary education in many directions, teachers and supervisors readily admit that the teaching and learning of arithmetic in schools are far from satisfactory. Notwithstanding considerable simplification of subject matter, improved textbooks, a generous time allotment and a favored place in the daily program, the learning of arithmetic in the case of too many pupils is uncertain and unstable. While arithmetic is an extremely specific subject, made up of definite information, understandings and skills, all of which are simple to the adult, it continues to be the principal cause of pupil failure in the middle grades.

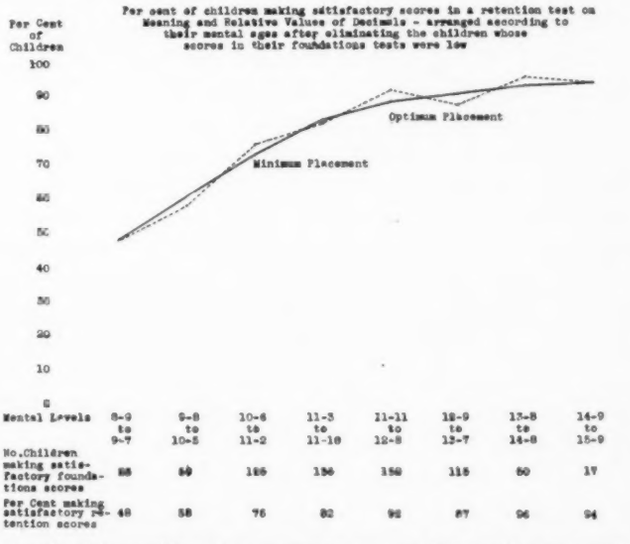
The present day curriculum is largely a logical arrangement, rather than a psychologic one—addition, subtraction, multiplication and division are applied, in that order, first to integers, then to fractions, then to decimals, with percentage, mensuration, graphs and certain other miscellaneous topics scattered along, mostly in the upper grades. The investigation here reported is a summary of some of the findings of the investigations of the Committee of Seven of the Northern Illinois Conference on Supervision in the placement of arithmetic topics.

Why Pupils Fail in Arithmetic

The aim of the investigation was, primarily, to discover how the topics may be arranged in the order of their increasing difficulty to child learners, a psychologic order in which each process and topic will be adjusted to the growing mental development of the pupils as they progress through the grades. The committee is convinced as a result of its investigations that much of the excessive failure in arithmetic is caused by attempts to teach many topics before the pupils are mentally capable of learning them easily and retaining them properly. An equally important cause of failure lies in the fact that pupils begin the study of a subject before they have sufficiently mastered the facts or processes that are prerequisite and fundamental to the new one. These two evils constitute a vicious cycle, one intensifying the effect of the other.

Pupils study a topic when they are not mature enough to learn it easily and retain it well, and then go on to study a new process, dependent upon the old one, without the necessary grounding in the fundamental process. The learning of the new one is still more unsatisfactory and inaccurate. It is no wonder that the results in mathematics are so poor in comparison to the large amount of time that the pupils and teachers devote to its study, and it is no wonder that many pupils become utterly discouraged with the whole matter and acquire a hatred of the subject or an inferiority complex which is likely to become permanent.

The studies here reported have involved the cooperation of superintendents, principals, super-



Mental Levels	8-9 to 9-7	9-8 to 10-5	10-6 to 11-2	11-3 to 11-10	11-11 to 12-8	12-9 to 13-7	13-8 to 14-8	14-9 to 15-9
No. Children making satisfactory foundations scores	88	89	186	186	158	115	60	17
Per Cent making satisfactory retention scores	48	58	76	82	92	87	96	94

Graph illustrating the manner in which optimism and minimum placement are determined.

visors, teachers and thousands of pupils in some 300 cities. One of the most valuable outcomes of this series of experiments has been the stimulus to teachers and supervisors which comes from participation in a piece of research and from feeling that they can cooperate in studies that will help them to solve their problems.

In general the results indicate that there is a stage of mental growth for each topic in arithmetic before which it is wasteful of time and energy to attempt to teach it, and a stage beyond which there is little to be gained by further postponement. Similarly there is a degree to which the prerequisite learnings must be mastered before the new topic can be effectively started. The committee has been more interested, however, in determining the general mental development necessary for each process than in measuring accurately the necessary foundation skills, because the mastery of foundations as a basis of success in learning is much more obvious.

Progress, Attainment and Retention Tests

The following general procedure was used for all topics studied:

A number of cooperating schools taught a particular topic to classes in several grades, usually three, following the methods carefully outlined by the committee. Before teaching the topic, however, the teacher gave a review of the processes needed as foundations, and the children's mastery of these prerequisite learnings was determined by a suitable test, called the "foundations test." The children's mental ages were determined by a group intelligence test and a pre-test was given to discover if any pupils had previously learned the topic to be taught so that their papers could be eliminated from the tabulations.

During the period of instruction the teaching material, the method of presentation, the time allotment per day, the number of days given to each phase of the work, the elimination of home work, the procedure for making up absences, were all specified by complete directions to the teachers, so that the experience of all pupils learning the particular topic would be as nearly uniform as possible. There were frequent tests to determine the progress of the pupils, and at the end of the teaching period a final test to measure attainment. Then a six weeks' period followed in which no teaching of the topic was permitted, and then another test, the retention test, similar and equal in difficulty to the final test was given.

All the test papers were turned over to the research department of the schools of Winnetka, Ill. where they were rescored, tabulations made in a variety of ways and the graphs prepared upon which the committee bases its recommendations.

Obviously, some criterion had to be adopted by the committee for determining successful learning. The one chosen after much discussion was this: That for learning to be considered successful at a given mental age, three-fourths of the pupils must make a score of 80 per cent or better in a retention test given six weeks after instruction is finished. The committee's problem then became to determine at what mental age level three-fourths of the pupils who have adequate knowledge of their foundations will make a score of 80 per cent or better on the retention test. There is not space here to review the reasons why the committee accepted this criterion rather than some other. It is admittedly arbitrary, but some such standard had to be adopted. Additional studies of the data of some of the experiments indicate that even if the desired retention test score were raised above 80 per cent or lowered below that figure, the conclusions as to the desirable mental age for teaching the topic would not be materially changed.

Retention test scores were first studied in relation to the foundations test scores to determine what control of prerequisite learnings was needed in order to ensure a fair chance for successful learning of the topic being studied. Pupils whose foundations test scores fell below this point were then eliminated from further consideration in determining desirable minimum mental ages. By this process of elimination only those pupils remained who had the necessary mastery of the processes fundamental to the one being investigated. The retention test scores for all these pupils were then grouped at suitable intervals of mental age and a graph constructed to show the percentage of pupils at each interval who made a satisfactory score on the retention test.

How to Determine Optimum Mental Ages

As the mental age increases a larger and larger percentage of the pupils at each succeeding level score 80 per cent or better on the retention test. This is shown on the graph by a curve which rises with increasing steepness until a certain mental age is reached, after which it tends to flatten out. A typical learning curve of this kind, the one obtained in the meaning of decimals experiment, is shown here. The curve rises rather sharply to a mental age of ten years, six months, at which level 76 per cent of the pupils made a score of 80 per cent or better on the retention test. Therefore the committee concludes that the meaning of decimals should not be placed in the course until pupils have reached a mental age of ten years, six months, and have also, of course, a sufficient proficiency in the necessary foundations.

Now, as the mental age increases still further, the curve of learning goes on rising until the mental age of eleven years, eleven months, is reached, beyond which there is little further increase in the percentage of pupils succeeding. This indicates that a mental age of nearly twelve years is the optimum age for the most efficient learning of the meaning and relative values of decimals. Postponement beyond this age would not materially increase the number of pupils successful in learning the process.

Mental Ages and Grade Levels

The minimum mental ages given in the summary are then the ages at which three-fourths of the pupils scored 80 per cent or better on the retention test, while the optimum mental ages are those ages beyond which there is little gain through further postponement of teaching. For some topics the minimum and optimum mental ages are identical, that is, the mental age at which three-fourths of the pupils score 80 per cent or better on the retention test is also the age at which the learning curve flattens out. In a number of topics the curves fail to flatten within the mental age limits tested by the committee, but go on rising clear up to the last mental age levels included in the data. For such topics it is not possible on the basis of the data in hand to determine an optimum mental age at which instruction would be most efficient.

The summary of findings in the accompanying table gives the minimum and optimum mental age at which each of twenty-five topics and divisions of topics can be effectively taught. These recommendations are all based on long and careful studies over a period of years, involving many pupils and many different communities.

The first column in the table gives the minimum mental age, that is, the age at which three-fourths or more of the children can be expected to make scores of 80 per cent or better on the retention test. The third column shows the optimum mental age, the age at which the curve of learning definitely flattens. There is decided gain through postponement of teaching until this mental age, but there is little gain through further postponement. In the second and fourth columns of the table are shown the grade levels to which the corresponding mental ages are normally equivalent. In the last column is shown the school grade in which the topic has been most frequently taught up to now.

In presenting this summary the committee does not mean to imply that the placement of topics in the arithmetic curriculum in accordance with the findings given will correct all that is wrong with arithmetic teaching. Only one important question, that of desirable mental age, has been studied intensely. There are other equally important questions that need investigation and solution before the teaching of arithmetic can be placed on a broad scientific basis. The studies here reported give objective evidence to support what thinking teachers have long known, that under the same teaching and with the same practice materials, the intellectually more mature pupils learn an arithmetic topic more easily and retain it better than less mature pupils, and therefore arithmetic teaching can be made much more efficient if mental age is given proper consideration.

It is significant that the topics which the experiments of the committee show are most seriously misplaced are those which the pupils have the greatest difficulty in learning. This is particularly true of compound multiplication, advanced column addition, short and long division, division of decimals and addition and subtraction of fractions and mixed numbers with unlike denominators.

In addition to establishing mental ages at which pupils may be expected to learn any given topic with reasonable efficiency, the committee investigations justify the following conclusions:

1. Continued practice is necessary for retention of a set of arithmetic skills. The supposition is not justified that when pupils have been taught a process and have shown by tests that they can operate it, they have learned that process and will retain their skill in it without practice. There was invariably a drop in scores from the final test to the retention test. Skill faded out somewhat in the six weeks during which practice was abolished. In subtraction, for example, at the mental age of nine years, one month, the pupils did 84 per cent as well in the retention test as in the final test; at the age of eight years, nine months, they did only 78 per cent as well. The loss was greater with the younger children. The amount of loss varied with the topic and the age.

Foundation Skills Are Important

The findings of the committee confirm what all teachers know, but sometimes fail to observe, that distributed practice is necessary for retention of a skill at high level.

2. It pays to secure proficiency in foundation understandings and skills before taking up a new process. Analysis of a topic in preparation for teaching reveals what the foundation skills are. In long division, for example, they are multiplication, subtraction and some of the skills in short division. Of the pupils who scored 50 to 56 per cent in such a foundations test before taking up long division, only 36 per cent could reach a score of 80 per cent in the retention test in long division, while of the pupils who scored 81 to 88 per cent in

the foundations test, 86 per cent reached a score of 80 per cent or better in the retention test in long division, and both groups had the same teaching and practice in long division.

The importance of facility in the antecedent or foundation skills was brought out especially in the teaching of the subtraction facts, compound multiplication, long division and addition and subtraction of fractions.

While it is desirable to perfect the foundation

THE RECOMMENDATIONS OF THE COMMITTEE OF SEVEN FOR THE MINIMUM AND OPTIMUM PLACEMENT OF TOPICS ACCORDING TO MENTAL AGE AND GRADE. THE USUAL PRACTICE AND THE RESULTS OF THE COMMITTEE'S EXPERIMENTS ARE COMPARED

	Results of Experiments				
Topic	*Minimum Mental Age*	*Approximate Grade Equivalent*	*Optimum Mental Age*	*Approximate Grade Equivalent*	*School Grade in Which Topic Has Usually Been Taught*
Addition facts (sums 10 and under)	6-5	1	7-4	2	1
Subtraction facts (easier 50)	6-7	1	8-3	2	2
Addition facts (sums over 10)	7-4	2	7-11	2	1
Subtraction facts (harder 50)	7-8	2	8-11	3	2
Simple column addition (columns not over three digits high and wide)	8-3	2	10-1	4	3
Subtraction (not over three digits in subtrahend and minuend)	8-9	3	9-1	3	3
Meaning of fractions	9-0	3	9-10	4	..
Addition and subtraction of fractions and mixed numbers with common denominators (no borrowing)	9-10	4	11-1	5	5
Multiplication facts	10-2	4	10-2	4	3
Simple multiplication (one place multiplier, not more than four places in multiplicand)	10-2	4	10-8	5	3
Compound multiplication (two place multiplier, not more than three places in multiplicand)	10-2	4	11-0 or higher[1]	5 or higher[1]	4
Simple bar graphs	10-5[2]	5			7
Meaning of decimals (changing fractions to decimals and vice versa. Determining relative values of decimals)	10-6	4	11-11	6	..
Multiplication of decimals (easy examples in simple and compound multiplication)	10-6	4	10-6	4	6
Advanced column addition (columns four digits high)	10-8	5	11-4 or higher[1]	5 or higher[1]	3
Addition and subtraction of decimals	10-11	5	12-6 or higher[1]	6 or higher[1]	5
Division facts—complete	11-2	5	11-2 or higher[1]	5 or higher[1]	3
Short division	11-4	5	12-2 or higher[1]	6 or higher[1]	3
Simple division of decimals (division of integer or decimal by one-digit integer)	11-4	5	12-2	6	6
Simple Case II percentage (involving only simple division of decimals)	11-4	5	12-6	6	6
Memorization of fractional and decimal equivalents ($\frac{1}{2}$=.5 .25=$\frac{1}{4}$)	11-6	5	13-10	7	..
Multiplication of fractions	12-3	6	13-2	7	5
Division of fractions	12-3	6	14-4	8	5
Case I percentage	12-4	6	13-11	7	6
Long division (complete)	12-7	6	12-7	6	4
Division of decimals (complete)	13-0	7	13-11	7	6
Case II Percentage (complete)	13-0	7	13-11	7	6
Addition and subtraction of fractions and mixed numbers with unlike denominators (subtraction problems involving borrowing)	13-10[3]	7	13-10 or higher[1]	7 or higher[1]	5

[1]Optimum placement not determined. Age indicated is highest for which data are available.
[2]Chronological age. This experiment was an early one carried on under a somewhat different procedure from that later adopted.
[3]The number of children at this mental age was too small to prove whether the minimum placement belongs here or higher. Certainly this topic should not be taught earlier than thirteen years, ten months.

skills before taking up a new topic, there is evidence of considerable growth in these skills through the practice the pupils get in them in studying the new topic.

3. An examination of the papers in one topic indicated clearly that many of the errors in the pupils' papers were individual—the result of not having mastered a step in the process, or not having learned a necessary fact, or a slip in memory, or an uncertainty about some element. Obviously, diagnostic tests used from time to time to disclose just what difficulties are hampering an individual would effect a saving of time and energy by indicating what teaching and practice are needed.

4. Some topics ought to be broken up into easier aspects and harder aspects with different age placement in the course of study. This principle is now being observed to some extent, but it should be more generally recognized.

The accompanying table shows several topics in which differentiated placement is clearly desirable, such as addition facts, subtraction facts, column addition and addition and subtraction of fractions. In the latter topic the break is marked. The most favorable mental age for learning to add and subtract similar fractions with like denominators is eleven years, but even at the mental age of thirteen years the addition and subtraction of fractions with unlike denominators is so difficult that only two-thirds of the group could reach a score of 80 per cent in the retention test. The difficulty appears twofold: in understanding, as indicated by the children's trouble in getting common denominators, and in the skill of carrying the process of reducing to a common denominator and adding or subtracting through the several steps, in the correct order, to the answer. There are so many chances for error, each slight in itself, but invalidating all the work that follows, that clearly the topic addition and subtraction of fractions should be taught at two or more levels.

Difficulties Met in Classifying Pupils

Long division is another topic to be taught first in its easier aspects and then in its more difficult aspects. The committee found that while long division, if taught as a unit, should be postponed to the mental age of about twelve years, six months, pupils nearly two years younger could master the easier phases of it.

Experimentation with such topics as multiplication and division of fractions, the understanding and uses of measures, and the processes with decimals should be undertaken to find whether they also should be broken up and taught at different intervals.

5. The tabulated report indicates the recommendations of the committee for the minimum and optimum placement of topics according to mental age and grade, provided other factors remain equal. But in attempting to carry out these recommendations for minimum and optimum placement of topics according to mental age, principals and teachers are likely to encounter formidable administrative difficulties. The pupils of any grade are far from uniform in mental age. In every class the mental ages range through several years, and there is much overlapping of mental ages in the successive grades. Indeed, few would favor grouping children according to mental age alone; chronological age, social age, physical age, years in school, attainments of various sorts and teachers' judgment of composite abilities, all must be considered in classifying pupils.

Selecting Topics to Fit the Pupil

Because of the range of mental ages in a grade, the committee hesitated to show grade numbers opposite mental ages in the table. But in order to show how badly some topics are placed in the courses of study, the committee decided to show the grades for which the stated ages are "normal."

In view of the spread of mental ages in a grade, what can be done about the placement of topics according to the committee's findings? Several answers can be given. They all resolve themselves into grouping of pupils according to abilities, some form of individual work and differentiating courses of study. Most large schools could provide better grouping of pupils than they do. If there are several rooms of pupils designated as fourth grade, for example, the pupils could be grouped in more able, average and less able classes, according to such a composite of abilities as the principal may consider determinative. Mental age may be one criterion. Making pupils acutely conscious of the bases for such grouping is not necessary or even desirable. It is a common practice to divide a large class into two sections for some kinds of activity. Arithmetic is one of the subjects in which the pupils profit if the sections are organized on the basis of specific abilities. In planning for all groups, large and small, the teacher is conscious of differences in ability, and should gauge her teaching and assignments accordingly.

Suiting the instruction to the pupil is one important criterion of progressiveness in the modern school. With differentiated courses, teaching the easier and the harder aspects of a topic at different mental levels becomes a possibility. In most schools, also, provision could be made for varying another element, the time element. The slower pupils, if not too slow, can succeed in a topic if given more time for assimilation, and the quicker pupils can

finish and have time for other activities, or can be provided with a richer and more mature course. Differentiation of content and of the time element is not uncommon in the better schools. The committee report should help teachers and administrators in working the differentiated courses and in providing groups within a grade with topics appropriate to their mental ages and abilities.

6. But the committee's recommendations as shown in the mental age placement table need to be supplemented by another consideration. Intelligence as measured by the tests used is not the only factor that determines the degree of success in learning an arithmetic topic. While the committee used as a standard for minimum mental age placement the ability of three-fourths of the pupils at the mental age level to attain a score of 80 per cent or better in the retention test, yet at younger mental ages one-half or one-third or one-quarter of the pupils could attain the same score of 80 per cent on the same test with the same teaching and the same time for practice. Mental age, therefore, as measured by intelligence tests in practical classroom situations should not be taken alone as the criterion for placement of topics. The teacher must take into account the individual pupil's success in learning previous topics. There may be something which might be called arithmetic aptness and which, along with desire to learn, habits of application and perseverance, enables a younger pupil to learn a topic just as readily as a pupil of more advanced mental age, but without these qualities in as high a degree. In organizing groups, then, both the mental age as determined by tests and the pupil's ability as noted by the teacher should be taken into account.

Architect Need Not Be Lowest Bidder, Court Rules

Minnesota statutes prohibiting school districts from making contracts "for work or labor . . . or for the construction or repairs of schoolhouses" without advertising for bids and requiring that such contracts be awarded to the lowest responsible bidders, were not held applicable to the employment of architects to furnish the plans and specifications for and to superintend the construction of a school building in a recent decision of the Minnesota Supreme Court in the case of Krohnberg et al. *vs.* Pass Jr., et al.

The work of the architects was preliminary to construction of the building and some of it was preliminary to the advertising for bids for the construction contract. Their services continued throughout the work of construction. The services were technical and professional in character and of a personal nature. The courts are divided as to whether contracts for services of such a nature are within the purview of statutes requiring that contracts be let to lowest bidders. The Minnesota court followed the more general rule that the statutes do not apply.

The same rule applied to the employment of engineers to lay out the plans and specifications for the heating and plumbing and other mechanical equipment. The fact that such engineers were employed by the architects and not by the district itself was immaterial when the architects, as a part of their contract of employment with the district, had agreed to employ the engineers for such purpose.

A Challenge to Educators

Glenn Frank, president of the University of Wisconsin, recently expressed himself as follows concerning the widespread demand for economy in educational work:

1. I think educators should get to the teaching profession and to the public all the pertinent facts about the shortsighted forces operating in the current drive against educational expenditures.

This is not to say that the schools should not strive to cut costs. They should. And they must. But they must not permit, if they can prevent it, a blind assault on the enterprise of education by limited and antisocial interests.

2. I think educators should meet unfair propagandism of the public with a wise education of the public in the facts of the situation.

We need to realize that thousands upon thousands of honest Americans who have always been the friends of education have become bewildered by the propagandists during the last few months. There is, make no mistake about it, an organized drive to cut educational costs below anything even this difficult time requires. If the bewildered friends of education are not enlightened, the politicians will be able to get away with a high-handed scuttling of the educational ship instead of buckling down to the unpopular task of fundamental political and governmental reform that, in cutting costs, might reduce political pork.

3. I think educators should meet the situation with offensive rather than merely defensive tactics.

I mean that now is the time of all times to go to the public with farsighted educational programs the importance of which to the national future can be shown conclusively. Now is not the time to huddle defensively around doubtful services.

Central School District Protects Rural Children

The system of state aid practiced in New York and the development there of central high school districts, offer many possibilities for other states to consider

By RAY P. SNYDER, Director, Rural Education Division, New York State Education Department

IT IS a little difficult to translate dry facts of state aid into human needs such as school curriculums, trained teachers, healthful school buildings and good equipment. Nevertheless, I shall try to do this.

The equalization quota is the "gold standard" of New York's system of state aid for school support around which revolve all other quotas and types of aid. There have been rumblings and suggestions from certain quarters that the school system should get off the "gold standard." Although these proposals have been resisted by educational leaders, the state authorities have wavered to the extent of yielding a possible 10 per cent reduction. Many leaders of public opinion have accepted this policy reluctantly, but they are far from convinced that the state should have wavered from its established policy even to this limited extent.

Explanation of the formula for determining the equalizing quota has no place here except in general terms. The chief factors used are the actual valuation of the district and the average number of pupils in school attendance. A low valuation district with a large number of pupils receives proportionately more state aid than a high valuation district with a small number of pupils. As valuation goes down and attendance goes up, state aid increases.

New York also provides transportation quotas for central, consolidated and union free school districts, and for high school pupils who live in districts that do not maintain high schools. The state

also provides building quotas in central school districts. Tuition is paid for pupils who must attend school outside their own districts. However, the aid provided by the equalization quota is the chief state support for the schools. The total amount apportioned to the schools annually is in excess of one hundred million dollars. The significance of this system of aid is manifest when it is remembered that New York's state budget is derived entirely from sources of indirect taxation; no portion of it is raised by tax on real estate. Therefore, state aid helps most the taxpayers that need help most, the real estate taxpayers.

In New York's rural school system there are common school districts in which are small district schools of one or more teachers, union free school districts of varying size, for the most part in large and small villages and usually not always maintaining high school departments, and central school districts. The last mentioned, the most recent, are highly satisfactory for providing both grade and high school facilities for rural children. A central district is in reality a school system composed of one or more former union free school districts and a number of outlying common school districts. In a central school system several schools are sometimes maintained, some of them one-teacher schools, but all are administered by a board of education of five members elected at large. In each such district, however, all pupils above the sixth grade attend the central school for both junior and senior high school instruction.

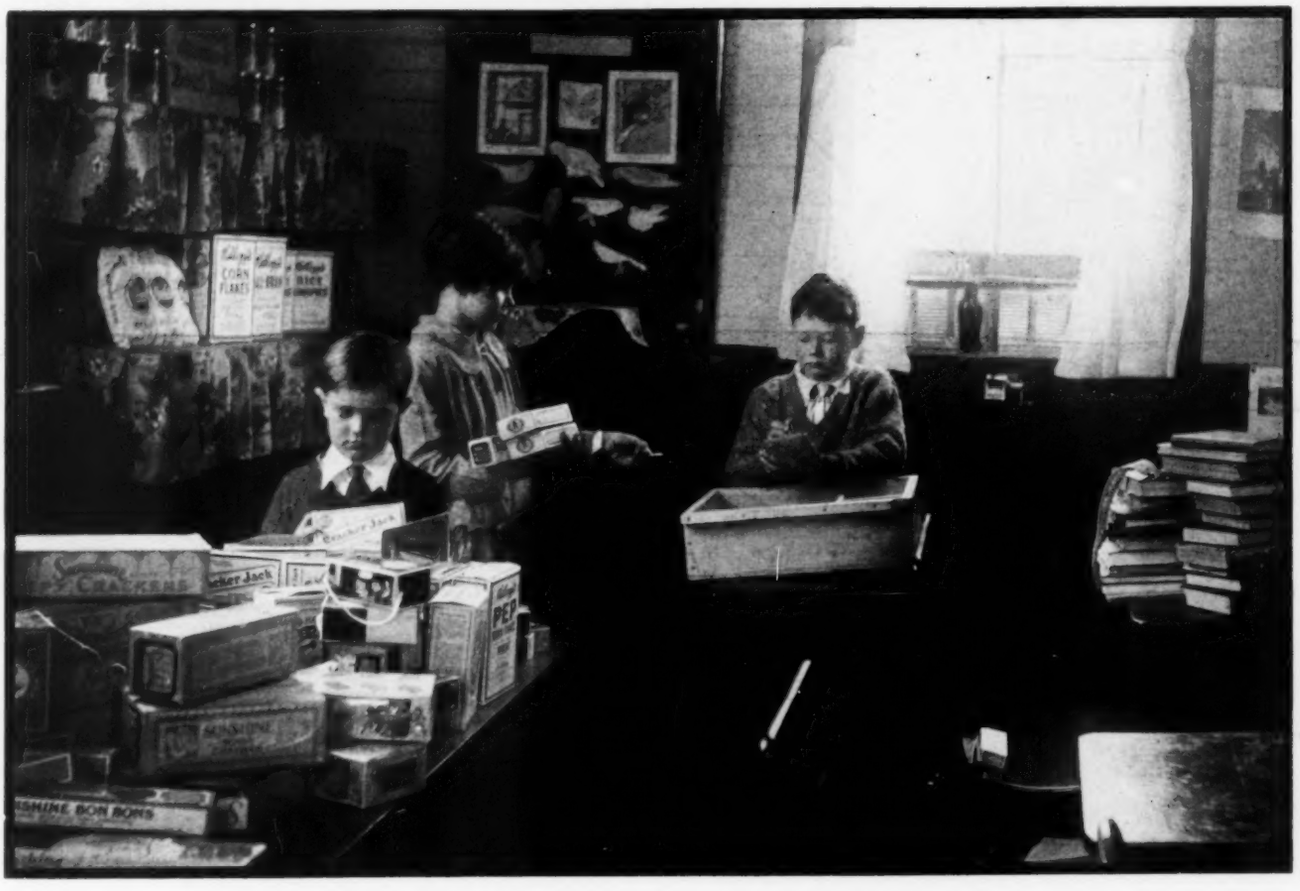
The standard one-teacher school in New York is a $1,500 school. Under the equalization plan each such district is considered as a unit, each receiving in state aid the difference between a four-mill tax on full valuation and $1,500, or as much thereof as is actually expended for school maintenance in the district. The low valuation districts receive a large portion of their school budgets from the state. In other words, districts of small local wealth may have a good school building and carry on a school program costing up to $1,500 at no greater burden of expense on real estate than is necessary to maintain similar schools in districts possessing much greater local wealth.

As a result of these advantages, buildings in the small common school districts as well as in other districts have been improved, much needed equipment has been added and in numerous instances better qualified teachers have been employed. The logical results of better surroundings and higher

The state pays part of the cost of providing modern busses to transport rural children to and from school.

qualified teachers are enriched and broadened programs of instruction, including project teaching, pupil activities, health instruction and the like.

I do not mean to imply that all small schools in New York are models of efficiency, but it can be said that among them may be found some of the state's most progressive schools for pupils in the early elementary grades. The best that can be said for a one-teacher school, however, is that it is only part of a school. With its many limitations it falls far short of being a complete rural school. It may be a good school in minimum essentials for lower grades, but it does not have the potentialities of solving that major problem in rural education, the education of the rural adolescent girl and boy. Something more is needed and New York's system of state support has made possible the central rural school, wherein the rural child may attend school in his own school system from kindergarten or first grade through the six years of high school.



The pupils assist in distributing the supplies of food in the one-teacher rural schools.

It is easy for any rural section to organize a central school district. All that is necessary, provided the population and territory are sufficient, is for the majority of the rural people to want it. The initial legal step in the formation of a central school district is that the group of districts to be included be laid out as a central district by the commissioner of education. The central district is then officially established by majority action of a duly assembled meeting of voters called to act on the proposition.

The central school is New York's answer to the rural school problem. The central school law definitely recognizes the advantages as well as the limitations of the small school and provides that such schools may be continued for pupils in the lower six elementary grades where conditions of topography or climate make their continuance desirable. At the same time, it provides for a central school wherein the older girls and boys may have school opportunities adapted to their needs.

The generous system of state support that makes these schools possible is based on the fundamental principle that the school is a state institution, and that all the children of the state must be educated at the expense of the wealth of the whole state. As has been well said, "It takes the wealth of the state where it is and puts the money where the children are."

Briefly stated, the law carries out the equalization principle by providing that each central district shall be entitled to all the aid to which the separate component districts were entitled, and also to all the aid to which the central district as a

This playground scene at Central Rural School, Bolton Landing, is typical of the supervised playground activities that are provided for the rural children under the New York State system.

whole would be entitled if it were a union free school district. This means that a central district receives all the equalization and other quotas to which the separate districts were entitled, and also the equalization and other quotas of a union free school district, considering the central district as such. The limiting factor is that a central district may receive only so much of this amount as is actually expended in excess of five mills levied on the full valuation of the central district. In addition to these quotas, each central district receives building and transportation quotas equal to one-fourth the cost of new buildings and one-half the cost of transportation. The result is that the average real estate tax in most of the larger central districts is not much greater than five mills on full valuation.

Nearly 60,000 Rural Children Enrolled

One hundred forty-one central districts are operating in New York State, all of which have been organized since 1925 when the central school law was amended to allow larger grants of state aid. The equalization quota law was passed at the same session of the legislature. Scarcely one of these districts could operate if the schools had to depend entirely on local taxation for support. In many of the central districts, the school systems are on a par with the best systems in the cities and larger villages. The farmer who lives in such a district is finding that for substantially the same average tax that he paid under former conditions, his children now have schools that are as good as those attended by the children of his city friends. No longer does this farmer feel that he has to move to the village or city to educate his children. On the contrary, his central district is being repopulated by his city friends because of the school advantages. The central districts are functioning during the depression and are providing education for nearly 60,000 rural children.

A Typical Central School Building

Let us visit one central district. When this district was first organized it was about average in size, being composed of eleven former common school districts and one union free school district. It has operated so satisfactorily that after three years, three additional common school districts and one union free school district have been added at the request of the voters in the annexed districts. There are in round numbers 700 pupils in attendance in all grades. Several branch schools are maintained, one of them being housed in a new three-teacher building.

Upon entering the central school building, which is situated in the larger of the two villages in the

district, the visitor will see well equipped and adequately lighted classrooms opening from spacious corridors. The building also contains a kindergarten, a shop, rooms for courses in agriculture, a home economics suite, music and art rooms, a cafeteria, provisions for health service, a gymnasium and a beautiful auditorium. Spacious playgrounds are provided for children of all ages. Here in this countryside, where farming is practically the only occupation, is a school system that provides the farmers' children with courses of instruction that satisfy individually and collectively their educational needs.

Protects the Farmers' Children

When a proposal was made to amend the central school law one rural mother wrote to a member of the legislature as follows: "Having five children all of whom attended the district school, and three of whom have completed high school, and for the past fourteen years having had children in both schools at the same time, I know of the conditions which led to the formation of the central rural school and how to compare the past with the present. I consider the central rural school represents not only the greatest progress in rural education we have ever known, but practically the only real progress our district has accomplished since pioneer days."

In a depression such as the present when real estate, and particularly farm property, cannot bear increased tax burdens, when many farmers cannot meet their obligations, the central school law is protecting the farmers' children against an inferior quality of education.

The Transportation System

Another form of state aid that protects the educational interests of rural children is the transportation quota equal to one-half the cost of necessary transportation of high school pupils who live in districts that do not maintain high schools and who "are receiving academic instruction in another district." Under this law, nearly 25,000 pupils are being transported to school this year, many of whom would otherwise be denied this privilege. Among this number are many pupils who would have gone to work if there had been any work to do. For them, perhaps, the depression is a blessing in disguise.

In recognition of the need for as well trained teachers for rural girls and boys as for city girls and boys, rural training departments have been established in four of the state normal schools. The training in these departments is not directed to the preparation of teachers for girls and boys that are "different," but rather to prepare them for teaching normal girls and boys who live and attend school in a rural environment under conditions differing greatly from those found in cities and large villages. Teachers from the rural training departments are prepared to teach in the small schools and also in the central and union free schools. Some of them because of their superior qualities are also sought by the cities. At the end of two years graduates of the rural departments receive a three-year certificate which may be renewed for two years. At the end of this period, the holder is entitled to a permanent certificate upon completion of another year of training. The certificate is valid in any school in the state, although the major training is, of course, in rural education.

Beginning September 1, 1934, all new entrants to the normal schools will be required to take three years of professional training, thus ensuring that all schools, both rural and urban, will eventually have highly trained teachers. No longer will rural girls and boys be regarded as proper subjects for teachers of inferior preparation. State support is making these things possible and the depression is hastening the arrival of this better situation for rural school children.

Central School Has Helped Children

New York's schools, like those in other sections of the country, have been hit during this period of economic disturbance. Budgets have been reduced in many rural districts. In a few instances, budgets have been slashed beyond reason and without due regard for minimum essentials. In other localities, by intelligent revaluation of procedures and administrative policies, school boards have effected wise savings that are desirable and that in some cases will raise rather than lower educational standards. On the whole, therefore, New York's system of state aid has protected the educational interests of rural children during a period of economic collapse so severe as to try the very hearts of men.

At a recent hearing in Albany, one farmer said after relating the hardships that had been experienced in his strictly rural community, such as business failures, a bank closing and low commodity prices: "The central school has been the outstanding factor in meeting the situation. With funds low and no employment, our children turned to the school library in their spare time. They returned to school and took postgraduate courses. There are few parents in the district that have not attended some of the meetings of the parent-teachers' association. It (the school) has been of untold value. For the first time in the history of the country our rural children have a chance."

Proposed Educational Reforms—Some of the Major Issues

Civilization depends on an education aimed at the development of social purposes by the individual. The spark of intellectual initiative should be fostered in children

By FRANK N. FREEMAN, Professor of Educational Psychology, University of Chicago

THE debates concerning proposed reforms in education are frequently unproductive for two reasons. In the first place, the debaters commonly present their considerations alone which support their own points of view without weighing carefully the arguments on the other side. In the second place, they frequently use terms in different senses. I have attempted to analyze the issues and to weigh the considerations impartially.

I presume I should first pay my respects to the perennial question of freedom. The discussions of this question certainly provide a multitude of examples of dogmatizing and a minimum of careful, empirical examination of the evidence. Freedom has been made a catchword, a slogan, and the demand for freedom has apparently been based on the assumption that freedom is an absolute good, unqualified by any conditions or limitations. On the other hand, it is highly probable that the majority of children are not given as much freedom as would be good either for them or for the society of which they are units.

The Extremists Are Becoming Fewer

The best theory and practice on freedom lie somewhere between the doctrinaire views of the extremists and the uncritical and traditional practices of the average unenlightened adult. Fortunately the extremists are becoming fewer in number. Well considered discussions, such as that of Prof. Hughes Mearns in *Progressive Education*, for December, 1931, while they may not solve all the problems of freedom, do state the case in a way which will suit most empirically minded students. If the moderates among progressives and conservatives alike would recognize clearly that they do substantially agree on the main features of the problem they could unite their influence to bring up backward practices and to discourage ill conceived and extravagant theories.

Somewhat related to the doctrine of freedom is that of self-expression. This is a concept which is sadly in need of analysis. It seems to combine vaguely a number of different ideas. In some connections it seems to mean the pursuit of some form of art, chiefly a fine art. In others it means a particular approach to art or a particular form of art, namely, one in which the individual strives merely to objectify his personal mood or emotion without regard to external standards or objective reality and with little regard for technique. Again, the term is applied to conduct in which the individual does as his impulse dictates without regard to social conventions.

A Hazardous Proceeding

If the advocacy of self-expression is confined to a reasonable emphasis on the fine arts as instruments of sublimation of some of the cruder human impulses, as a relief from the humdrum of routine daily life and as the means of creating refined pleasures, it must receive the hearty approval of intelligent educators and students of human nature in general. When, however, it takes the form of suggesting that the raw impulses of human nature are in themselves safe guides to conduct, that all we need to do is to remove inhibitions, that inhibition is the major cause of mental aberrations and that the egocentric attitude is to be encouraged, it runs counter to the findings of psychology and leads to a way of life, which is dangerous both to the individual and to society.

General formulas are often applied to widely different kinds of material when the difference between them is so fundamental that the only ground on which the principle can be transferred from the one to the other is that of analogy. This is a hazardous proceeding. An example of this practice is the indiscriminate application of the notion of freedom in the realm of conduct and of learning.

What, then, is the case in the intellectual realm?

Should the child be told everything and expected to accept it on authority, or should he be expected to accept nothing on authority but rather to discover all truth for himself? To ask these questions is to answer them. One reason we are often muddied in our thinking is that we do not clearly formulate our questions. We just apply so-called general principles in a vague sort of way. Of course, the formulation of these questions regarding authority and discovery in learning does not answer them in particularized detail. That requires a large amount of concrete investigation of the learning of many sorts of children under a variety of circumstances. But it does rule out the two extreme positions.

Independent discovery is a fine ideal to set before the teacher and the student. Discovery and invention are doubtless among the most exalted activities of mankind and the most productive of human progress. Independence of judgment, furthermore, is an admirable individual trait. The spark of intellectual initiative in children should be fostered, and if possible fanned into a flame. Our usual practice fails to recognize that the child is capable of thinking for himself, much less to set the stage to encourage discovery. So the child grows up feeling that in some mysterious way things are so because parents or teachers say they are so, instead of learning to see through things themselves.

All this is true, but it is not the whole truth. The other side of the truth is that all of us, the most brilliant and highly educated as well as the rest of us, are compelled to accept most of our knowledge on authority. We have not the time, the training or the ability to explore all fields of knowledge. To pretend that either we or our pupils do discover any considerable part of our knowledge or arrive at any considerable part of our opinions by our own efforts is to bring us perilously close to hypocrisy. For the major part we must trust to authority.

Must Discriminate Among Authorities

Lest this statement be misunderstood I hasten to add that there are two kinds of authority. There is the authority which rests on the possession of the technique of a special field and competence in investigation and upon the intensive study of the contributions of other investigators. On the other hand, there is the authority of rank, position or even of personal aggressiveness. An essential feature of everyone's education is learning to discriminate among authorities.

Progressive education is commonly thought to involve another feature, somewhat akin to intellectual originality and initiative. In fact the two are commonly spoken of interchangeably, as though they amounted to the same thing. I refer to interest. But though interest is often spoken of as though it were synonymous with freedom and intellectual initiative it is not only distinct from these but is itself a composite of several elements; or perhaps it would be more correct to say that the term, interest, covers several different mental attitudes. As in other cases, this results in confusion of thought due to the fact that disputants may think they are talking about the same thing while they really refer to quite different concepts. Clear definition would solve many disputes at the very outset.

An Example of a Half Truth

In the first place, interest means following one's interests. In this sense, interest is closely related to freedom. Freedom is thought to be necessary because insistent interests press for realization. Interests are thought to be inherent drives which develop and mature within the individual relatively independently of external circumstances. They come to fruition at definite stages of development in childhood and youth and demand realization as the price of sanity and vigor of mind.

This doctrine, emphasized by G. Stanley Hall, is widely accepted in modern theory. It is an excellent example of a half truth. A distinction should be made between interests and drives. Interests are specific, whereas drives are general and largely not specific in human beings. The drives, as for example, the hunger drive or the sex drive, may lead to a great variety of particular activities. They become specific according to the circumstances and education of the individual. They do not dictate particular educational activities but allow for great variety in the way they may be expressed. Interests on the other hand are specific. Being specific, they are determined not only by the nature of the individual, but also, and in very large measure, by his environment and training. Interests are largely acquired, and may be cultivated. The cultivation of interests, starting with the relatively undifferentiated human needs and drives, is one of the chief functions of education.

According to a second usage, interest means much the same as intellectual curiosity. It is the thrill which goes with finding out things and the impulse which prompts the activity of finding out things, of exploring the environment. It is strong in children and apparently in the young of the higher animals in general. Unfortunately it tends to die out in the adult as he becomes acquainted or thinks he becomes acquainted with his surroundings. But it can be fostered and can remain fairly vigorous throughout life. It is particularly valu-

able because it combines almost unalloyed pleasure with practical usefulness.

The mistake that is sometimes made about this intellectual curiosity is to suppose that it is highly selective, that the child is curious only about certain specific things and that education must rely wholly or chiefly on the lead of the child to find out what he is interested in. The objects of any person's curiosity are, of course, restricted in a measure by his abilities, his previous experience and his stage of development. But the teacher has a wide range of choice within these restrictions, and the lines of curiosity cannot be used as specific guides in the development of the curriculum. Curiosity is an appetite which thrives on feeding and languishes from starvation; but it is not, unless pampered, a finical or highly selective appetite which demands just certain viands at certain times.

The third type of interest is suggested by one use of the term in everyday life. We say a person has an interest in business when he has a practical stake in the business through the fact that he has invested labor or money in it. His interest in this case is not intellectual curiosity. It is a demand upon his thought and energy due to the fact that his practical fortunes are bound up with the success of the institution. In similar fashion a child has an interest in an enterprise if he has committed himself to carrying forward the enterprise. Such an enterprise is commonly called a project. If the child engages in a project his interest in the completion of the project as a whole is diffused over the subsidiary activities or forms of learning which are instrumental in the total activity. Thus the child may learn arithmetic because he needs to use its operation in building a bird house or laying out a garden. What we may call the scientific activity is motivated by the practical activity.

An Erroneous Conclusion

That theoretical interests may thus grow out of practical interests is beyond question. That it is wise to make use of this relation to develop desirable academic interests, particularly in the case of backward children, or children and youth in whom practical interests seem to be strong and theoretical interests weak is doubtless true. But that theoretical interests are regularly subordinate to practical interests either in the development of culture and science in the race or in the experience of the individual, or that practical enterprises should furnish the chief framework for the organization of the curriculum of the school, is, I believe, a conclusion contrary to sound psychology and pedagogy.

This brings us to still another emphasis which is commonly made in modern progressive education. A practical enterprise may be carried on largely by study and thought, as for example a library project, or it may consist chiefly of overt bodily activity, such as gardening or shop work or folk dancing. A program which involves a large measure of these overt activities is called an activity program. It is the fashion to consider activity programs to be inherently and markedly superior in their educative effect to programs which contain comparatively little overt activity. In order to evaluate this view we must make a general survey of the function of overt activity in education.

Education Must Facilitate Thinking

As usual we must begin by making an analysis and drawing distinctions. We cannot evaluate activity unless we know what kind of activity we are talking about and the relation of activity to our educational aims. The value of activity for mental development is sometimes inferred from a misconception of the present day psychologic conception of the connection between thought and motor impulses or minute muscular contractions. It is true that when we think of words nerve impulses travel to our vocal cords, and produce minute contractions, or that when we think of swinging a golf club there are similar nerve impulses followed by slight contractions of the muscles of the arm. All thought is probably accompanied by some movement, though it may be so delicate as to be beyond our observation.

But this hardly means that we must go out of our way to lead the child to engage in activity. It means that activity is so all pervasive that we could not stop it if we would. In fact we might turn the principle around and say that the way to train the child in activity is to induce him to think, because this will exercise the activities that go with thinking. But this is perhaps drawing too fine a line.

What we need to do is to conceive properly the development from overt or external activity to the internal activity which we call thought. Our responses to the external world are at first made in the form of moving about from one place to another, moving objects about and handling or manipulating them. In the course of these manipulations the animal or person notices likenesses, differences and connections or relations. In the course of development the individual at the human level, at least, learns to think of resemblances, differences or combinations which are not actually made before his eyes but which he makes in thought. He also learns to use symbols that stand for objects and relations. That is, he learns to use some form of language. In other words, he has learned

to think. Overt activity has become internal activity or thought. It is the business of education to facilitate this development, not to retard it.

Activity may be justified on other grounds than on its function in supporting thought. Some activities are useful in their own right. We learn to dress ourselves, feed ourselves, write, handle tools, play games of skill or drive automobiles, not because these activities give us the material for thought but because they yield us useful or pleasurable returns. If we teach a child to dance and play and observe the social amenities we may not make him intellectually brighter but we make him more competent in dealing with his social environment. We learn such activities by performing them. Activities that are useful in themselves and that fall within the province of the school should be put into the curriculum, not primarily because they promote intellectual growth but because they have direct value. In other words, we should not make activity a fetish. It is not a magic method of making geniuses out of morons. It has its own place in the scheme of education, a place which has not been accorded it in traditional education. But that place is not the dominant one. We shall not judge correctly what that place is if we think that the way to get children to think is to have them move their arms and legs. Moving the arms and legs is the way to get some things done but thinking is accomplished by a different technique.

Drill Should Be Carefully Planned

I have not by any means covered the entire range of problems which cluster about the concept of progressive education. For example, I have not dealt with the important question of drill and its relation to meaning. Drill, in my judgment, has an important function in education, but it should have meaning to the pupil. He should, so far as possible, recognize the importance of the ability we expect him to acquire. It is legitimate also to use the play spirit to motivate drill. Drill does not need to be self-initiated but it does need to be carefully planned and properly related to the child's insights and purposes.

The child has his own purposes, as has the adult. These purposes do not spring fully formed from his inner consciousness, to be sure. They develop from the interaction of the child and the various individuals and social groups with whom he comes in contact. The school and the teacher have a large share in originating and directing the child's purposes. Moreover, the child must learn to adjust his purposes to those of other people.

Perhaps the most important factor bearing on the child's energy and productivity, as well as the adult's, is his morale. This is hard to define but we all know it in our own experience. It is the will to achieve, to work, to learn, to live and sometimes to fight. It is courage and optimism and faith in the world and in ourselves.

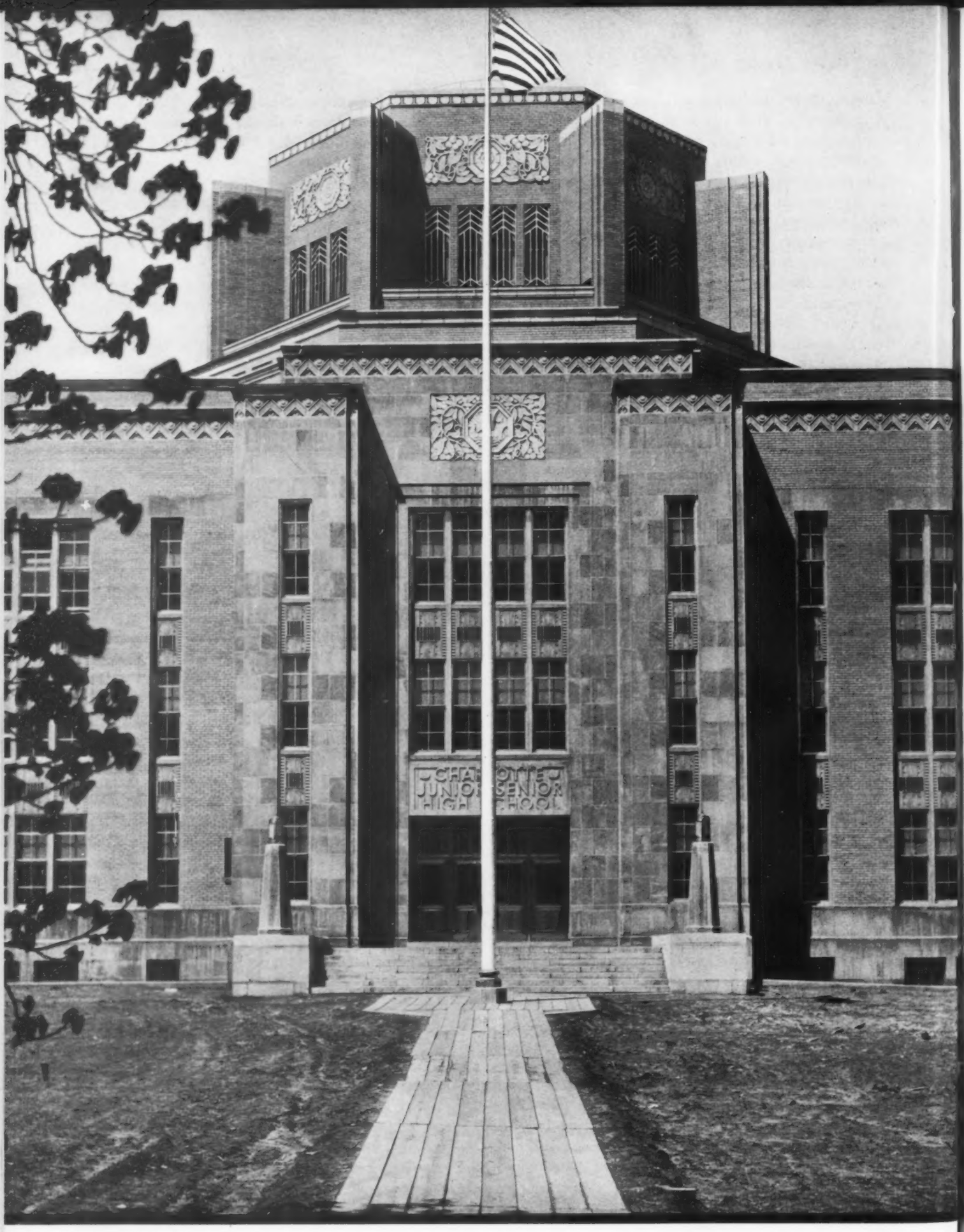
This is the insight of progressive education, and it is a valid insight. It would be a mistake to deny it. But it is also a mistake to believe that it is a complete insight. There are two other features which are essential both in education and in life. Progressive education has underemphasized or neglected them. It is possible, I believe, to combine them with meaning and purpose. In fact, meaning and purpose are rather ineffectual without them, in the same way as they are blind without meaning and purpose.

A Reasonable Amount of Routine Is Valuable

The two other features are discipline and social responsibility.

Discipline is an old, much maligned and much misunderstood idea. It gets its bad reputation largely from the fact that it means to most people solely discipline imposed arbitrarily and from without. It means military discipline of the "Theirs not to reason why" type. Against this is set up the notion that every worth while task will automatically set up its own discipline, and that therefore the discipline under these conditions will be nicely adjusted to the demand for it. It is true that we must avoid setting up discipline as an end in itself. But, on the other hand, we must recognize the plain fact of experience that self-control is gained, in part, by exercises or activities which are designed to develop it. A reasonable amount of routine is valuable, not only to enable different persons to work together but also to establish that regularity of rhythm of effort and relaxation which enables the individual to accomplish the most with his resources of energy. Finally, self-control demands directed effort to avoid following the line of least resistance.

Finally, it is clear that we are in urgent need of giving definite content to the general formula of purpose. Unless we specify that purpose in our times must be social purpose, the principle permits if it does not definitely suggest the predominance of purposes, not only of the individual but also for the individual. It is not sufficient to point out that the individual may, if he sees fit, form purposes that are in harmony with or even promote the general good. We cannot trust ourselves to this chance. Our very civilization, I believe, depends on an education which makes its central objective the development of social purposes on the part of the individual and which does everything in its power to see to it that these social purposes are effectuated in socialized behavior.



The exterior walls of the new Charlotte Junior-Senior High School, Rochester, N. Y., are of manganese-spotted buff face brick. The lower trim and the pylons at the main entrance are of Indiana limestone. Modest ornamentation has been provided by way of terra cotta panels.

A Modern School—to Be Complete in Fifteen Years

Many new features for safety and ease in administration are incorporated in the new six-year secondary school in Rochester, N. Y., which has been designed for enlargement as enrollment increases

By FRANCIS R. SCHERER, Architect and Deputy Superintendent of School Buildings, Rochester, N. Y.

THE city of Rochester, N. Y., in 1916 extended itself northward to the shores of Lake Ontario, thereby including within the municipality the Port of Rochester at the mouth of the Genesee River. Growth in this annexed area has been rapid. A new elementary school was erected in 1924 and another in 1927, which took from the old Charlotte High School building all of the children below the seventh grade. The numbers in the upper six grades have increased from 162 at the time of annexation to 1,008 at the present time.

Funds were made available in 1931 for the construction of a new building on a site near the old property. The major portion of the new site, which subsequently has been enlarged to about twenty acres, was acquired in 1926. A survey was made of this section of the city to determine the present and future requirements. The survey indicated that a building with a 1,200 pupil capacity would be needed immediately and that the ultimate need would be accommodations for more than 2,000 pupils. As a result it was decided to plan the new high school along the lines of the established elementary school policy, that is, to build in sections as the actual need developed. This procedure was a marked departure in the policy for high school buildings, since all existing secondary schools in Rochester had been built as complete units under the initial contracts.

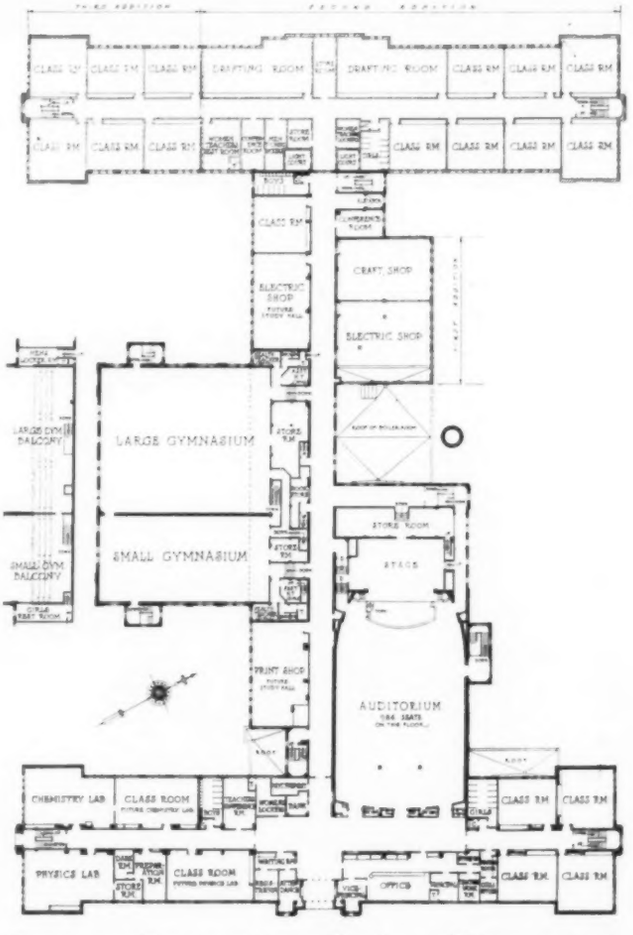
Classrooms, the natatorium, special rooms, the plant laboratory and the cafeteria are on the ground floor.

The board of education had adopted the recommendation of the superintendent of schools that the new building be a combined junior and senior high school, housing grades seven through twelve and offering all courses of study, including foreign language, general academic, commercial, industrial arts and home economics. The first step in the preparation of the preliminary plans was the interpretation of these courses of study in terms of building facilities. This task was lightened considerably since there were two other junior-senior high schools already in operation. These existing plants were analyzed with reference to pupil-periods devoted to each subject per week and the conversion made to the actual requirements for the proposed number of pupils to be housed in the new Charlotte building, based upon its present and future working capacity. In this conversion process, the commonly accepted efficiency factor of 80 per cent was used.

A preliminary plan was developed which offered the facilities in the four stages of construction, permitting respective capacities of 1,256, 1,426, 2,365 and 2,885 pupils. The working drawings and specifications were prepared upon the approval of this preliminary plan by the board of education and the superintendent of schools. The drawings and specifications incorporated the most recent information made available by the National Council on Schoolhouse Construction.

Test pits and borings showed that the building site was low in bearing value. There were many pockets of a fine sand which flowed when wet. Some of these pockets were deep, and it was necessary to go forty-two feet below the existing grade to reach soil of sufficient bearing value. It was decided to construct the building of a skeleton frame and transmit the column loads to clusters of piles. The excavation for the first section of the building was made and 1,429 steel cased concrete piles were driven. Fifteen contracts were then awarded, one for each of the following divisions: structural steel; mason and carpenter; tile, terrazzo and marble; painting and finishing; plumbing; vacuum cleaner; stone; roofing and sheet metal; heating and ventilating; electric; linoleum; elevator and dumb-waiter; laundry equipment; fire alarm system, and electric clock and program system.

All of the work is substantially completed, and



Two gymnasiums and the auditorium, which seats 1,364 pupils, are features of the first floor plan.

Practical experience in business office routine is provided the pupils in the office practice room.

the building was put into use at the beginning of the second semester, 1932-33. The building will cost about 33¾ cents per cubic foot, exclusive of the piling work.

It was necessary to meet a finished grade condition where a difference in elevation of twenty-one feet will exist between the southeast and northwest corners of the complete building. A proposed street, which will divide the building site from the play area site, will be an important thoroughfare and will necessitate architectural treatment of the west side as an important façade.

The building has a skeleton frame, the major portion of which is reenforced concrete and the remaining portion is structural steel. Floor and roof slabs are of a two-way reenforced system with removable steel domes. While a few contact metal lath and plaster ceilings have been used, the ceiling material in general consists of beveled insulating tiles secured to leveling strips which are engaged with the under side of joists.

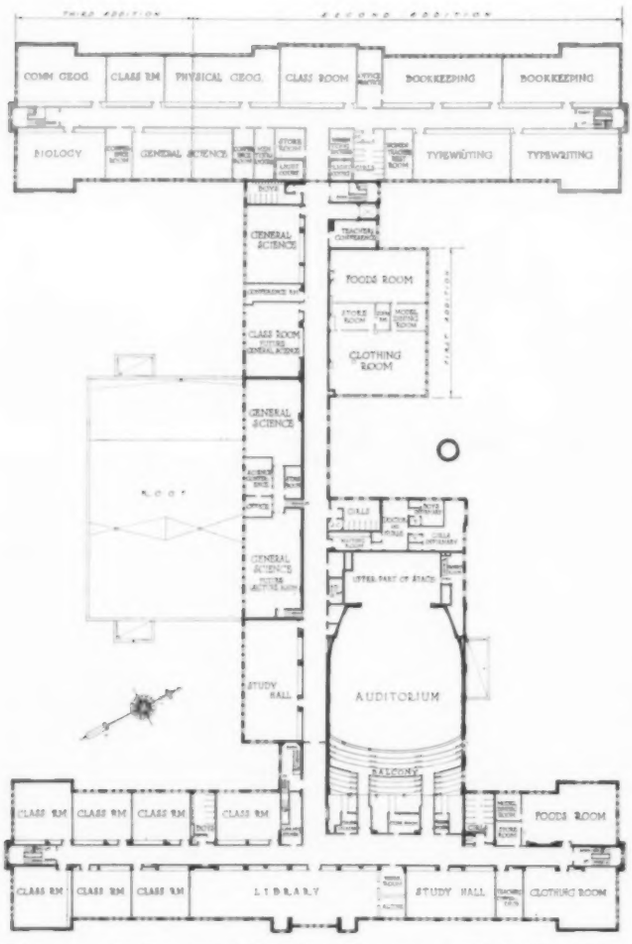
The exterior walls are of manganese-spotted buff face brick. The lower trim and the pylons at the main entrance are of Indiana limestone while the upper trim is of three-tone buff terra cotta. Modest ornamentation has been provided by way of terra cotta panels engaged in the brick walls. One of these is at the east end of each pavilion occurring in the main façade. That in the south pavilion is the conception of the activities in the early harbor which is now the Port of Rochester. The companion panel in the north pavilion depicts the activities at the new port.

Aluminum window assemblies are used in the front or main wing. These include double hung aluminum sash, extruded mullions and frames and cast spandrels. The main entrance doors and transom grilles, together with the grilles at the tower windows, are also of aluminum. The dominant feature of the building is its tower or dome, which contains practice quarters for the school band. A greenhouse used as a plant laboratory in connection with science work has been erected on the ground rather than on the roof of the building, which was formerly the custom.

The walls of all corridors and stairhalls are faced to a height of six feet above the floor with textured tile, dark cream in color.

The finished flooring, with a few exceptions for special occupancies, is of brown battleship linoleum with an integral coved base, finishing flush with the plastered wall. Movable furniture is used.

The woodwork throughout the building is of



The second floor contains the library, study halls, classrooms, infirmaries, bookkeeping and typewriting rooms, a large clothing room and the upper part of the stage.

white oak. The stairs are of monolithic reenforced concrete construction with four-inch safety nosings; the balustrades are of wrought iron. The stairways are enclosed with glazed, metal covered smoke stops and doors, equipped with automatic releases.

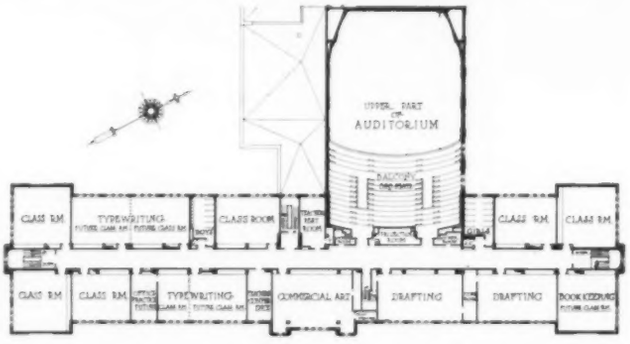
There are built-in wardrobes in all the academic rooms and study halls, as well as in most of the special subject rooms, for storage of pupils' street clothing. Separate steel pigeonholes or compartments are provided for each pupil in the upper portion of the wardrobes for storage of books and supplies. Steel lockers have been provided for the shops and the health education section. There are separate locker rooms for the women and men teachers, containing steel lockers for storage of their street clothing.

Each academic classroom is 23 feet, 9 inches wide and 30 feet long. The wardrobe is built along the corridor side of the room which side also contains built-in bookcases with glazed doors. The depth required for these permits of a recess at the entrance to the classroom door, which prevents the door from projecting beyond the corridor wall when it is open, thereby leaving the corridor unobstructed at all times and available for the maximum number of files of pupils. Forty-two-inch slate blackboard covers the rear of each room and the wardrobe doors also contain slate blackboard. A cork bulletin board extends across the entire front of each room and in the center of it is mounted a four-leaf teacher's swinging board. Each classroom is provided with an electric secondary clock and a program bell, a telephone outlet, a radio outlet and an electric receptacle at the rear of the room, which serves the dual purpose of connection for the motion picture projector and the floor polishing machine. The top molding of the bulletin board is fitted with a display rail having a hook and clip device. There are steel tables and chairs for the pupils.

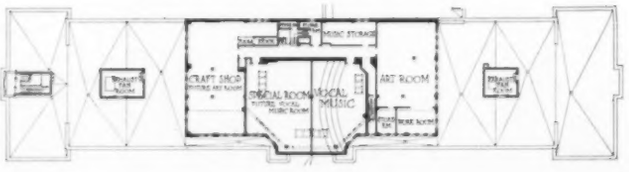
The dimensions of the special subject rooms were determined by various committees who were familiar with the facilities necessary for teaching the particular subject. These rooms require connections with the various mechanical services, and also opaque shades and special equipment, much of which was provided under the building contracts. Separate contracts were awarded for the equipment of some special rooms, such as the science rooms, the shops, the home economics rooms and the library.

The kitchen and cafeteria are located so that deliveries may be made at grade level. A subbasement or cold cellar has been provided. A dumb-waiter serves the kitchen from this storage space. The equipment and space provided for the cafeteria permit it to operate on the two lunch period plan, which is standard in the Rochester schools.

The auditorium seats 1,364 pupils and may be



Above is a section of the third floor, which contains the upper part of the auditorium, classrooms and commercial rooms. The lower plan shows a part of the fourth floor.



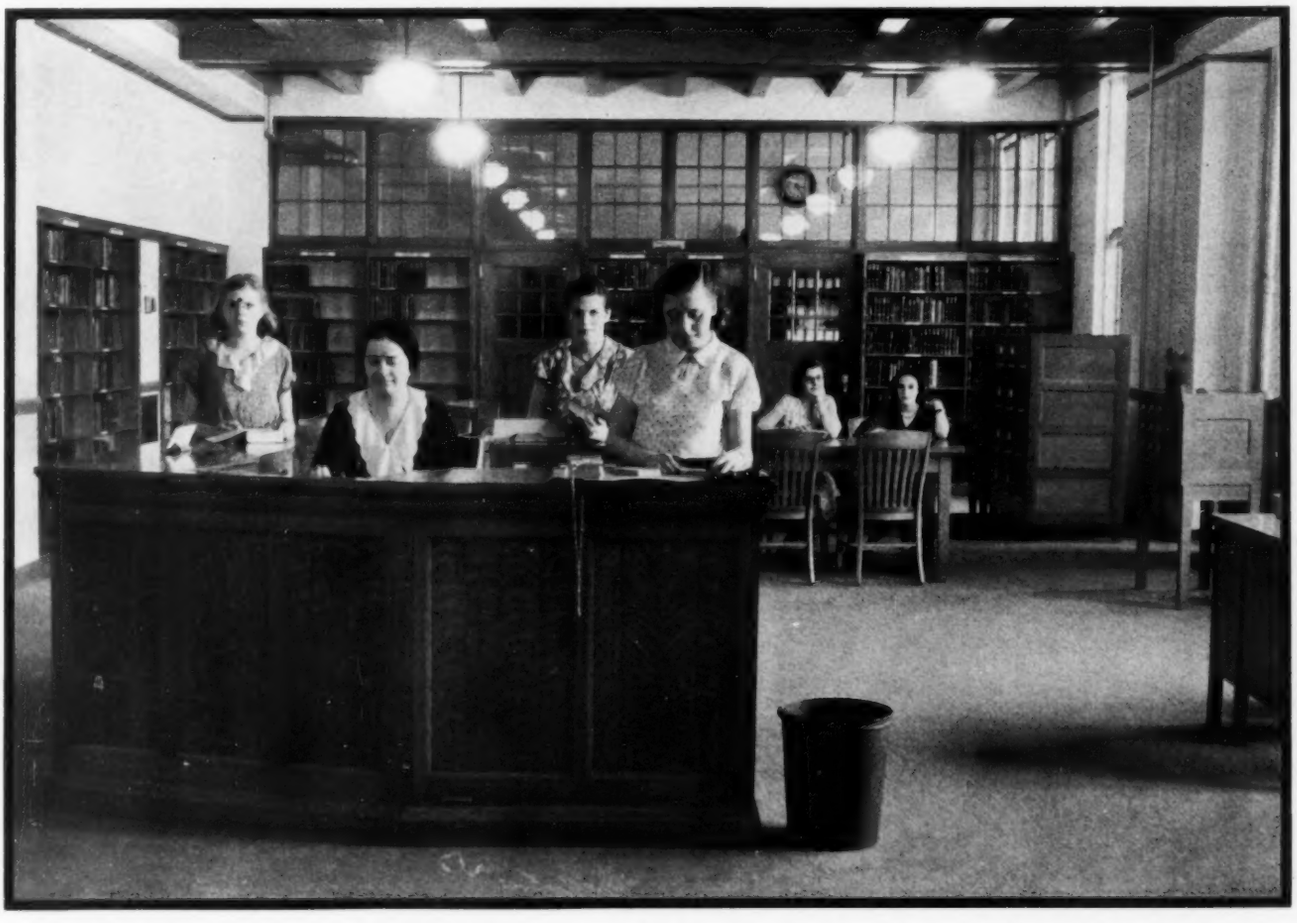
entered directly from either the first, second or third floors, thus ensuring a minimum of lost time in connection with the school assemblies. The main floor is saucer-shaped and there are proper sight lines for each seat. The orchestra pit contains sufficient seats to accommodate the school orchestra of sixty-five pieces. A stairway leads from the orchestra pit to an instrument storage room underneath the stage. The stage is equipped with a complete electric lighting system, dimmer controls and other facilities.

The health education facilities consist of a large gymnasium, a small gymnasium, a natatorium, hygiene, locker and shower rooms for girls, and hygiene, locker and shower rooms for boys. It had been the earlier practice to provide a separate boys' gymnasium and a separate girls' gymnasium, each having a clear floor space of 60 by 90 feet. A study of the use of these facilities in Rochester indicated the desirability of having one large gymnasium and one small gymnasium, so arranged in relationship with the boys' and girls' locker and shower rooms that either one might be used by one group without interference with the other. Such an arrangement was developed and is giving splendid results.

Each gymnasium may be entered directly from the outside and the spectators' balcony in the natatorium may likewise be entered directly from the outside, thus making it unnecessary to open the entire school building when only the health education facilities are to be used. A laundry is maintained for the laundering of the swimming suits and towels.

A departure was made in fitting up the boys' shower room. Under the new arrangement shower heads are placed nine feet off the floor and spaced twenty-seven inches on centers in both directions. The side walls are glazed tile and the flooring is nonslip tile, provided with several floor drains. Liquid soap dispensers are arranged at frequent intervals on the walls. The class stands under the shower heads while the instructor manipulates the shower controls, all of the shower heads responding to the one control. Arrangement is made for soaping and rinsing and changing the temperature of the water.

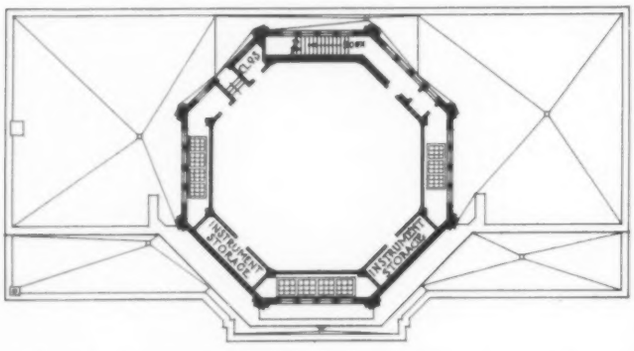
When the water is shut off the boys enter the drying room and thence go back to the locker room. A few individual showers have been provided on the wall of the large shower room for the use of small groups.



The modern library with its conference alcoves at the rear affords the pupils a splendid place for study.

The building is heated and ventilated by the split system. There are three H.R.T. boilers equipped with underfeed stokers. The boiler room has two entrance levels, one at the ground floor and one at the basement level. Coal is dumped by gravity into a storage bin where again it feeds by gravity to a traveling dory which is run into the boiler room, hoisted electrically and dumped into the hoppers. A 300-ton emergency reserve of coal is stored in concrete bunkers shut off from the boiler room by steel plate doors.

The air supply to the auditorium is conveyed overhead by a central fan. There are twelve diffuser disks in the main building and six diffuser disks in the ceiling under the balcony. Air from the assembly is exhausted by means of an exhaust fan through adjustable mushrooms placed in the



A feature of the building is the band room in the tower, where the noise will not disturb the other pupils in their classrooms and study halls.

floor of the main floor of the room and in the balcony. Tests of the system and the use to which it already has been put indicate that it is quite satisfactory. There are both supply and exhaust fans for ventilating the natatorium, the locker rooms and the shower rooms. No mechanical ventilation is provided for the two gymnasiums, the ventilation of these rooms being accomplished by opening the windows.

The remainder of the building is equipped with heating and ventilating units. A system of exhaust flues and ducts and a fan room is provided, but the exhaust fans have been omitted pending the results of a trial. A dual system of temperature control has been installed, and the building is divided into four zones based on the combination of units most likely to be used for after school and evening activities. The damper of each heating and ventilating unit is automatically positioned by an intermediate thermostat. The direct radiators in each room are on a positive type of thermostat.

Except for a few specially designed fixtures, the general lighting of the building is by means of wholly enclosed opal glass luminars. Special subject rooms, such as those for clothing, art and drafting, are provided with glass steel reflectors to simulate daylight. The unusual feature of the electric installation is that it includes an emergency system of electric lighting. The emergency system is powered by a storage battery and supplies a minimum lighting of a ¼-foot candle in the auditorium, the natatorium, and the principal means of egress therefrom.

Eighteen underwater lights are provided in the side walls of the swimming pool, about two feet off the bottom. These lights can be turned on by emergency switches at either end of the natatorium. An alarm system is provided in the natatorium to sound call bells throughout the health education facilities in the event that special assistance is necessary.

The building is equipped with a central vacuum cleaning system, with outlets provided in each room and at various other parts of the building. An important accessory in connection with the vacuum cleaning system is the boiler flue cleaning equipment.

The school site has been graded and seeded, but lack of funds has made it necessary to defer the planting of shrubs and trees. The landscaping may possibly be undertaken by the various classes and by the school community group. The athletic field will be developed as soon as the city has provided the streets and sidewalks. The field will contain facilities for mass athletics. For example, during the soccer season thirteen pitches will be provided, two of which will lie within the half-mile oval track.

It is probable that fifteen years will elapse before the school becomes a completed unit.

Accessibility Is Important Factor in School Library

Replies to inquiry forms were received from 390 schools reported to have outstanding library services; forty-four schools were visited and the library facilities studied in great detail, in compiling the National Survey of Secondary Education.

It was found that more than five-sixths of the schools studied have the library housed in rooms used only for that purpose. Less than one-tenth of the schools have the library in the study hall. Librarians prefer to have the library housed separately; principals prefer to have the library housed in study halls or in rooms directly connected with the study halls by doors or passageways. Pupils, the investigation reveals, use the library more often in schools where it is readily accessible than where it is housed separately.

Let America Study the French System of Financing Schools

Salaries of French teachers have first claim on the national budget. The government also fixes standard professional qualifications and uniform salary schedules, maintains a teachers' pension system and provides subventions for school buildings

By FLETCHER HARPER SWIFT, Professor of Education, University of California

THOUSANDS of schools in the United States are in immediate danger of being closed. Terms of many thousands more are being disastrously shortened. Salaries of teachers have been cut 10, 20 and 30 per cent. In such a situation it is well to ask, "What can America learn from the experiences and policies of older nations?"

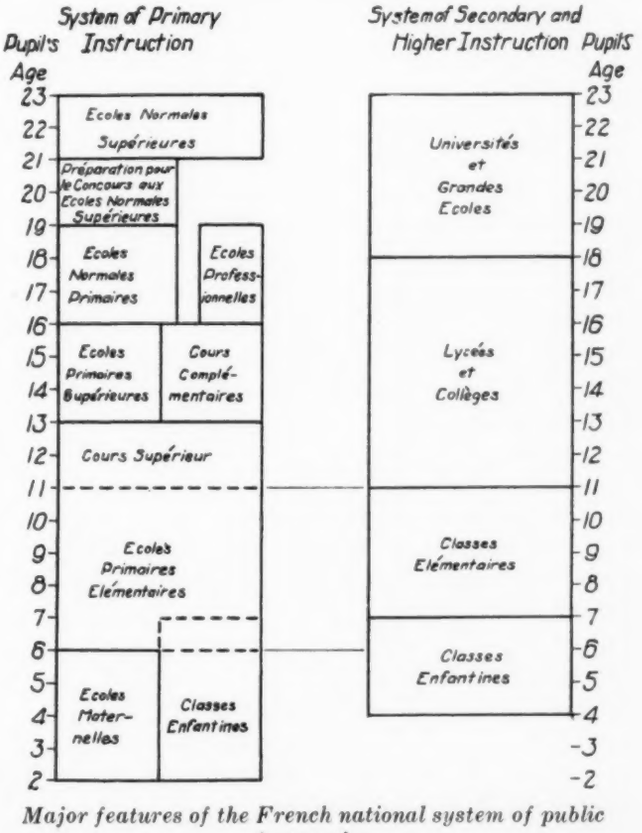
Perhaps France has more to suggest in the way of possible modification of American policies of school finance than any other European nation. France originally placed upon local communities the responsibility of establishing and supporting schools. But when the results of this policy became unsatisfactory, France suppressed local school taxes, substituted national taxes and made the national government responsible for the payment of salaries of teachers and all other elementary school functionaries. Other striking characteristics of the French system of national school support include national salary schedules, a pension system and generous subventions for school buildings and certain minor expenses.

National Government Pays Personnel Costs

The French national system of public instruction includes four groups of schools: (1) primary or elementary, (2) vocational and technical, (3) secondary and (4) higher. The supreme authority over these four groups is entrusted to the National Ministry of Public Instruction and Fine Arts, whose responsibilities are divided among the following six subdivisions: higher, secondary, primary and vocational instruction, fine arts and physical education.

France proper, excluding Algeria, has an area of 212,659 square miles, divided into ninety departments. Departments are subdivided into 37,944 communes which correspond to cities, towns, villages or boroughs in the United States. For the purpose of educational administration, France, including Algeria, is divided into seventeen academies, each covering from three to eight departments. In each academy is maintained a national university presided over by a rector who also has general charge of all classes of schools within his academy.

In general, the national government pays all personnel costs, leaving to the communes the responsibility of providing the major portion of the funds required for equipping and maintaining school buildings. Communes are further responsible for the cost of any facilities they introduce or maintain voluntarily, such as medical service and school supplies. The most important costs paid by departments are those involved in the erection,



Major features of the French national system of public instruction.

equipment and upkeep of departmental normal schools for preparing primary teachers and in maintaining the office of academy inspectors.

Because the national ministry keeps no record of the monies furnished by communes and departments and because it is impossible to secure this information from any source whatsoever, this account of receipts and expenditures must be confined to funds from the national government.

Four Factors of Measurement

Final responsibility for erecting elementary school buildings rests with the communes. The national government, nevertheless, provides subventions varying from 30 to 90 per cent of the total cost. The exact proportion paid by the national government is determined on the basis of the ability and effort of the commune as measured by the following four factors: (1) assessed valuation, (2) the rate of tax levied for the proposed undertaking, (3) the number of taxpayers and (4) the proceeds of this tax. Plans for building operations, major alterations or major repairs for which a commune seeks a national subvention must be approved by the council of the department as well as by the national ministry. National subventions are paid only upon the submission of vouchers for work completed. Eighty per cent is paid during the execution of the work and the balance when the work is finished.

The largest single item of school costs in France, as in other countries, is that for personnel. A significant feature of the French system of school support is the careful endeavor on the part of the national government to ensure each employee an income adjusted to his legitimate individual needs. This is done, first, by providing him with a fixed and stable salary or *traitement* based upon his professional qualifications and consequent official classification and, second, by maintaining an extensive system of bonuses or *indemnités* designed to cover almost every unusual situation or obligation that may befall a teacher or other school functionary.

Promotion and Pay of Teachers

Until a teacher has taught at least two years and has secured by examination a "certificate of pedagogical aptitude," he is classed as a probationer and receives an annual salary of 10,500 francs. On the first day of January following his receipt of this certificate he is enrolled in the sixth or lowest class of regular elementary teachers or *instituteurs titulaires*. He then receives an annual salary of 11,500 francs and participates in the regular system of promotion.

Promotion from class to class takes place either automatically on the basis of seniority or upon recommendation by the academy inspector. Automatic promotion on the basis of seniority is granted after four years of service in classes eight, seven, six and five, and after five years of service in classes four and three. Except for certain exceptions specified by law, promotion from class two to class one is made on the basis of recommendation. Teachers who have served at least three years in any class are eligible for promotion by recommendation, provided the number promoted on this basis, except under certain specified conditions, shall equal at least 30 per cent of those eligible.

All school officers are paid in accordance with a graduated national schedule. The salary scale for men and women has been the same since 1919. Substitute teachers are paid on the basis of a daily wage of 32 francs. Inspectors receive the highest salaries among elementary school functionaries. These vary from 22,000 francs per year for departmental inspectors of infant schools to 90,000 francs per year for national inspectors. Annual salaries of elementary teachers in lower primary schools range from 11,500 francs in class six, to 19,000 francs in class one. Teachers and principals in higher primary schools receive annual salaries ranging from 26,000 francs to 46,000 francs in the Department of the Seine, and from 16,000 francs to 26,000 francs in the various other departments.

Living Quarters Provided for Teachers

The maximum number of hours of service per week which can be required of teachers, principals and other school officers is definitely fixed by law. For teachers in infant schools, lower elementary schools and continuation courses the maximum is thirty hours per week. All excess hours of service are paid for in accordance with a national scale. Payment is on the basis of a fixed amount for each hour continuing throughout the school year. The amount varies with the subject taught, the grade or level of instruction and the degrees and diplomas held by the instructor.

Some bonuses, such as those given to directors, supervisors and bursars, are essentially payments for performing additional services. Others represent compensation to teachers who have gained advanced degrees or who have secured special diplomas entitling them to teach backward children or special subjects such as agriculture and domestic science. Still other bonuses, such as university scholarships or foreign scholarships, provide financial assistance to teachers seeking cultural or professional improvement. Perhaps the most significant of all bonuses are those de-

signed to ensure teachers and other school employees satisfactory living and family conditions. This group includes bonuses for lodging, for differences in cost of living, for dependents and for illness, including maternity allowances for women.

Every commune is required by law to provide suitable living quarters for every fully qualified elementary teacher and every probationer or, in lieu of actual living quarters, an *indemnité de logement*. Teachers are divided into three categories: (1) unmarried, (2) married and (3) married and having children. The requirements of suitable living quarters for each category are carefully specified by law. Unmarried assistants require two rooms, one with fire. The lodging of an unmarried woman must include a kitchen. Married assistants or elementary teachers at the head of a hamlet school require three rooms with fire. Directors of lower primary schools require four rooms with fire. Directors of higher primary schools require five rooms with fire, one of which must be a kitchen. For the purpose of fixing lodging bonuses communes are divided into nine classes on the basis of total population. For communes of each class are established upper and lower limits of the lodging bonuses.

Family Bonuses for State Employees

The *indemnité de résidence* is a monthly supplement granted in recognition of the fact that the cost of living increases as population and proximity to Paris increase. Such bonuses are granted not only to all elementary teachers, but also to all civil employees of the national government living in a commune of more than 5,000 population.

Family bonuses, known as *indemnités pour charges de famille*, are granted to state employees for the following classes of dependents: (1) immediate offspring, (2) brothers, sisters, nephews, nieces and orphans actually supported by the functionary, (3) children of the wife of a functionary by a previous marriage unless there has been a divorce and the children under consideration live with the first husband or unless, in a contrary case, the first husband contributes to their support. The following annual allowances were provided by a decree in 1930: for the first child, 660 francs; for the second child, 960 francs; for the third child, 1,560 francs; for the fourth child and each successive child, 1,920 francs. The bonus is normally discontinued when a child reaches the age of sixteen unless the child is incapacitated for work. It is continued up to eighteen years of age for a child under contract as an apprentice, and up to twenty-one years of age for a child who continues to pursue studies even by correspondence.

Moving bonuses or *indemnités de déplacement* are granted not only to a functionary who moves from one post to another, but to a functionary whose salary has been discontinued because his position has been suppressed. If a functionary is transferred to a better position his moving allowance is proportionately decreased. No moving bonus is granted to a functionary who is transferred to a new position at his own request.

Payment of Salaries During Illness

In the case of ordinary illness a teacher or other school functionary has the right of leave of absence on full pay for three months, plus one-half or one-third of his salary, according to circumstances, during the following three months if his illness continues. Salaries cease after six months except that a teacher or other functionary of an elementary, secondary or vocational school suffering from tuberculosis or mental disorder may be granted a leave of absence for three years with full salary, followed by a two-year leave with one-half salary.

France encourages married women and mothers to continue as public employees. Such an employee who has reached a position entitling her to permanent tenure in the national system is eligible for maternity leave with full salary for two months before and two months after confinement. No elementary school instructress is allowed to resume her teaching duties until she has obtained a certificate based upon a medical examination and indicating that she can resume her duties without injury to her health. In a contrary case, an extension of leave with full salary may be granted for two additional months. Important but less generous maternity privileges are extended to substitute teachers.

Pension Monies Come From Two Sources

France's first really effective civil pension law was passed in 1853. Among its beneficiaries were all teachers in public educational institutions—primary, secondary and higher. Radical changes in living costs following the World War, decline in the purchasing power of the franc and increase in the number of dependents in need of relief resulted in important changes in the pension system.

The pension system of France is a national, compulsory, contributary system financed by monies drawn from two major sources, (1) compulsory deductions of 6 per cent from salaries and certain specified bonuses, of all civil functionaries included in the system and (2) annual national appropriations sufficient to pay that portion of the pension claims which cannot be paid out of the contributions of functionaries.

Functionaries may be retired either upon their

own request or by official action. A functionary fifty-five years of age who has served twenty-five years, fifteen in active service, has the right to retirement with pension. Retirement becomes compulsory at sixty years of age. School functionaries may be retired by official action before they reach the compulsory retirement age if the minister of public instruction decides that the good of the service requires such action. Retirement in such a case can be pronounced only in accordance with conditions definitely stated by law and only after six months' advance notification.

Some Defects in the French System

The minimum pension granted on the basis of length of service shall equal one-half the average annual income subject to pension deductions received by a functionary during the last three years of service. Departments may, if they choose, supplement the pensions provided by the national government. Many school functionaries served in the World War and consequently are eligible for a military as well as a civil pension. This situation is cared for by a law passed in 1932 providing that the combined income of a pension and a salary, or of two pensions, shall not exceed 45,000 francs.

Certain defects in the French system deserve mention. For instance, in communes of less than 500 inhabitants, pupils or their families are held responsible for janitor service. Approximately 58 per cent of all communes in France fall within this class. French pedagogical literature abounds with protests against such work.

The claim is made that elementary teachers are discriminated against, not only in the matter of salaries but also in the matter of pensions. It is asserted that a Parisian elementary school teacher who retires at the age of sixty, after forty-two years of service, will receive an annual pension of less than 15,000 francs, whereas a brigadier of police may retire before fifty years of age and receive a pension of 15,500 francs.

"Clerks in a special class receive salaries up to 22,500 francs," writes M. Gouffé in a recent issue of *L'Ecole et La Vie*, "administrative employees attached to the naval ministry are eligible for a maximum salary of 26,300 francs, but the salaries of teachers in elementary primary schools range from 10,000 francs (now 11,500 francs) to 19,000 francs."

Irregular substitutes or *suppléants éventuels* work only on the days when they take the places of regular teachers. The amount they earn each month is less than that which they might earn as part-time workers. They have no right to sick leave, but are obliged to meet the requirements of social insurance.

Certain merits of the French system should be summarized at this point. For instance, teachers' salaries do not vary from one community to another as they do in the United States. They vary only in accordance with the teacher's classification and the supplementary allowances or *indemnités* he receives.

Under a decentralized system like that in the United States, any adjustment of teachers' salaries to changes in living costs must await the individual action of many thousands of communities. Under a national system it is possible by a single act of the legislative body to adjust salaries of public officials to increases or decreases in costs of living. Between the years 1914 and 1928, salaries of elementary teachers were increased to such an extent that their purchasing power in 1928 was more than five times that of 1914.

Stability is one of the most essential characteristics of any financial system. The fact that the national government provides practically all funds required to pay salaries of functionaries of primary instruction guarantees stability. Salaries of all French public employees, including those of teachers, have first claim on the national budget. Asked whether the salaries of French teachers had ever been withheld on account of a financial crisis or lack of funds, M. Rosset, national director of primary instruction, replied positively, "No. Such a thing would not even be thought of in France."

French Schools Are Never Closed

The French system of financing personnel costs is not entirely satisfactory. Nevertheless, while salaries of elementary teachers are low, they are stable, equal and largely adjusted to the individual financial needs of each teacher. A system providing every classroom with a thoroughly trained teacher and assuring every teacher steady employment, a definite wage, comfortable lodgings and a recognized social status has numerous advantages over the American system. We do not find in France, as we do in America, thousands of elementary teachers employed at starvation wages for less than six months, many of them compelled to work during the remainder of the year as waitresses, clerks or at some other occupation entirely outside their profession.

French schools are never closed. Moreover, children in remote rural communities are taught by teachers having the highest professional qualifications and belonging to the highest salaried class. Salaries, living conditions and social status of such teachers make them content to remain in the same commune year after year where they become identified with its social and economic life as well as with its classroom problems.

Scientific Textbook Appraisal Is Essential

Validity of evaluation activity is contingent on the worth of the measuring instrument, the honesty and ability of the participating personnel, and the relative objectivity of approach

By B. R. BUCKINGHAM, Harvard University

EVALUATION as distinguished from development means the appraising, measuring or judging of textbooks after they have been placed on the market. Those especially concerned are the school people and it is they who do the judging in connection with selecting textbooks for adoption. Evaluation has sometimes been carried on as a scholarly problem, but even then the purpose has been to provide tools or methods for use in a practical situation which calls for choosing the best from a number of competing books.

Score cards are sometimes used. A score card of some sort is desirable, even if it consists only of a series of topics to be considered. But a score card alone does not ensure scientific methods or results. Science calls for something more than an instrument. In the first place, the instrument must be a good one. But this is not enough. A yardstick, matched to the millionth part of an inch with a certain platinum bar known as a standard and kept under glass in a room of uniform temperature, would, in the hands of a bungler or a doctrinaire, be no guarantee of correct results. In the second place, therefore, the instrument must be properly used so as to yield a valid measure. In the third place, the user of the instrument must have a scientific attitude.

A Good Score Card Is Hard to Make

Textbook committees soon discover that it is not easy to make a good score card. They cast about for a ready-made card, then, and too often a friendly book man offers to provide one. Such a card is likely to omit items not applicable to his book and to overweight those on which his book stands high. The basis for weighting and even for selecting the items will probably be neither objective nor impartial, and thus the first requisite for a scientific measurement—a scientific instrument—will be lacking. The committee must either make its own score card or adopt one from an unbiased source, probably introducing modifications to meet local conditions. Almost any score card will be a good one if it is constructed impartially and with a real knowledge of the schools concerned and of the purposes to be served.

No Place for Guessing

I said that scientific evaluation required, first, that the instrument must be a good one and, second, that the instrument must be properly used. A score card is not well used when each committee member merely judges or guesses a number applicable to a given book under each rubric. Here, let us say, is a set of headings for use in appraising a series of language books. One heading is "provision for drill on matters of good usage." Let us suppose that the weight attached to this item is 150 out of 1,000. The thing I deprecate is the turning of the pages of a book and guessing that it is worth 100 or 125 out of this possible 150. This seems to me indefensible either as common sense or as science. It would be better to count the number of drill exercises that meet a defined standard of quality. It would be still better to note the distribution of these exercises in various ways which the committee would set up. Under each rubric of a score card every reasonable effort should be made to base the award upon objective facts. This may involve considerable effort. But the selection of textbooks is so important that members of textbook committees should be given some sort of training for their task and should be allowed free time for it.

Again, I cannot believe that a score card is well used when the ratings for each item are merely added to produce a score for the book. A book, let us assume, has been rated under a dozen headings. To suppose that a rating for the book may be had by summing these ratings is childish. Some of the items are dependent upon each other. To some extent they tell the same story. To add the

scores on two such items is a misrepresentation. The numbers attached to items A and B on the score card give each item all the weight it should have. To the extent that A and B tell the same story, it is clear that the sum of their weights overemphasizes this story.

Three Essentials in Scientific Evaluation

Again, an item may be such that only a certain amount of it is advantageous. Let me illustrate from a score card for predicting the success of teachers. One item is physique. A certain amount of physical fitness is absolutely necessary for success in teaching. If we are to allow a maximum of 10 points for physique, something like 4 points for a given individual may be indispensable. Increments up to 6 or 7 may rapidly increase the probability of teaching success. But robustness beyond 7 contributes little or nothing. Probably the difference between the physique of a normally well conditioned person and the physique of a Jim Thorpe or a Babe Didrikson would be of no consequence in teaching. Increases in this quantity mean increases in teaching ability only in its middle ranges. We cannot take care of this condition by simply adding up scores for a general rating.

Let me illustrate one other aspect of the question. A certain famous textbook score card gave a weight of 40 out of 1,000 for the physical features of the books—type page, illustrations and binding. A book could of course be printed on wood pulp with no illustrations and with the pages merely stapled together. Such a book might be scored as low as 10 or even zero without much damage in the final rating. Such a book obviously ought to be ruled out. Proper use of a score card will provide for a minimum on each item, below which a book will be disqualified no matter what its rating on other items may be.

I have suggested three essentials in scientific evaluation—first, a good instrument; second, its proper use; and third, the presence of a scientific attitude. Most important of these is the scientific attitude. Without it neither of the other requisites is assured. Assuming a reasonable degree of technical competence on the part of a committee or access to good advice of a technical sort, a scientific attitude is so important that with it the committee will need little else and without it the committee will be little the better for anything else. A scientific attitude implies openmindedness, freedom from prejudice, willingness to listen to all sides. It implies a critical attitude, the ability to distinguish the specious from the essential. It implies a preference for objective data and at the same time a willingness to entertain subjective data according to their importance. It implies a willingness to seek facts where they may be found, welcoming even the statements of book men instead of erecting a wall of pretended secrecy. It implies the drawing of no conclusions which the findings do not warrant. Such an attitude is a directive influence. It colors and conditions every act and goes further toward guaranteeing the integrity of the result than any other consideration.

I now wish to refer to a rather remarkable evaluation of textbooks that occurred in connection with an important adoption of arithmetics. The score card employed was notable in that it betrayed little internal evidence of bias toward any particular book. If I were merely to read its major topics most of them would seem rather ordinary. Among them are problem material, processes, drill, diagnostic and remedial features, provision for individual differences and physical features. Not until one considers the long list of subitems, many of which are themselves subdivided, does one realize the thoroughness with which this instrument permits the examination of arithmetics. Moreover, two or three of the main heads are worth mention even apart from their subdivisions. One of these is informational arithmetic, defined to include materials where emphasis is placed upon understanding, interpretation and use rather than upon processes and skills. Another is balance, defined as the proper proportioning of materials. Another is vocabulary and sentence structure, a heading that deserves much more detailed attention than it usually gets.

No Need for Argument

But this particular evaluation of textbooks was remarkable not alone and perhaps not chiefly because of the measuring instrument employed. The way the committee used this instrument was particularly commendable. It did not rely upon guesses or even upon discussion, when the most vociferous often win the votes. It sought objective information under most of the headings of the score card. For example, one of its fourteen objective studies related to the heading, "diagnostic and remedial features." The subcommittee which made this study did not fail to distinguish between what is named diagnostic in the textbook and what is really of that character. Mere drill material and review exercises are often called diagnostic because the term has a certain vogue. The committee set up its criterion for exercises of this sort and then proceeded to count the occurrence and note the distribution of such exercises in each of the competing books. It was then in a position definitely to state the number of tests and test items that met its definition for diagnostic and remedial material.

Several other considerations ought to enter here besides the number of these tests and items, and I am not informed whether or not the committee gave weight to them. The point that I wish to make, however, is that in regard to one essential particular—the quantity of material of a definitely defined sort—there could be no dispute. This procedure seems to me to be much better than mere argument about something that can be determined beyond the need of argument.

A Joint Task of Author and Publisher

I must also mention a promising method of evaluating books that is being increasingly employed by school people. If a city is contemplating the adoption of a history for the fourth grade it purchases thirty-five or forty copies of each competing book to be considered. Each of these sets is used in a class and judgment is based at least in part upon the satisfaction these books give. I do not need to point out that this sort of competitive tryout may be well or poorly conducted. All the elements entering into scientific method have application here. Special care to hold constant the immaterial variables—the considerations that would spuriously affect the result—should of course be exercised. Care should likewise be taken to base the final appraisal upon really important conditions, uniformly and fairly applied.

I must now say something about the other part of my double subject, the scientific development or making of textbooks. This is the joint task of author and publisher.

Whether science, common sense or intuition is responsible, school books have improved vastly during the past twenty or twenty-five years. The textbook is undeniably a better teaching instrument today than it has ever been in the past. It does things that the books of earlier days did not even attempt. In its treatment it dares to be free to a degree that has never before been allowed. Its greater length, made possible by better teaching of reading, permits the inclusion of attractive approach, concrete data, episodes, illustrations, applications, comparisons, summaries—in short, all the characteristics of the best books of any sort. Textbooks have become less "textbookish." In the old days no one ever read a textbook unless he had to. Now the textbook need not be dull to be acceptable. To what extent is this due to science? No one can be sure. But it is an interesting coincidence that the era of the modern textbook corresponds pretty closely with the scientific era in education.

One way in which the publisher secures textbooks that are scientifically sound is by selecting authors who will supply that kind of material. The better authors today know the literature of their field. Moreover, they are either teachers of the subject at the level for which the book is provided or they have studied the needs of pupils of that level. They know what has been tried and found good. They have often used their books in teaching. They have frequently published articles and monographs on important aspects of the subject or of its teaching. Much of the material they will put into their books will, in the very nature of the case, be scientifically grounded. In fact, no series of maneuvers, however scientific, if made merely *ad hoc* can take the place of the slowly matured judgment of the author who has studied and taught his subject to the point of mastery.

On the other hand, well grounded knowledge is distressingly spotty and insufficient. The textbook writer must cover a broad field. He often needs to secure definite knowledge for the purpose of making the text. This is particularly true when a subject is relatively new or when new outcomes from old subjects are sought, or when specific applications of established principles are to be made to new material.

Consider, for example, an author—a woman in this particular instance—who is preparing a set of readers for the grades. Suppose that she wishes above all other considerations to make the reading matter interesting to the pupils. She has at hand, to be sure, the studies of Jordan and Dunn and Hosic. These will give her the qualities that stories ought to possess if they are going to appeal to children. From these studies she can also identify particular stories that have the desired appeal. But there are not enough of these and they have all been used frequently. If a new set of readers is justified it should contain new materials.

What Do Children Like to Read?

Accordingly, in the instance that I have in mind, a definite and prolonged effort was made to furnish on a research basis the type of material the author sought. The query was, "What do children like to read?" In order to afford an answer, many teachers recorded the spontaneous questions of children concerning their environment. Moreover, each of seven subject matter specialists prepared 100 questions which he thought were important, interesting to children and not generally answered so that children could understand. Several thousand pupils were then asked to indicate which of these questions they would like to have answered. Well written stories or informational pieces were then prepared in answer to the questions that came out on top in point of interest to the children. Finally these pieces were tried, first, through adult judgment and, second, through trial in classrooms.

The result was a body of material which possessed without question the one quality the author wished it to possess—interest for children.

Another way in which authors and publishers assure themselves that their offerings are appropriate is by actual tryout in the classroom. Sometimes, as has been noted, the author teaches his book in mimeographed form. On the other hand, he may secure the tryout of his materials by having them printed on his own initiative and by having them used in as many schools as are willing to purchase them. Such a method was employed on a large scale in the case of a social studies series. In making scientific tryouts of materials in recent years the publisher has sometimes issued in printed form an experimental edition. This method was used with notable success a few years ago in the case of a series of arithmetics. Not only was an experimental edition of the series tried extensively, but special forms were employed for securing the reactions of teachers as they used this trial edition.

Experimental editions, whether prepared by the author or by the publisher, are extremely expensive. It is doubtful whether at the prices now charged for textbooks such a procedure can become at all general. Yet it is highly desirable that it should become general.

The making of a textbook includes its manufacture as well as its writing and editing. Certain publishers are cooperating in research concerning the type page. Investigations of this sort have hitherto been carried on by psychologists and students of education. Their results have been conflicting, due in part to a failure to understand the technical problems involved. It is to be hoped that the outcome of the experiments of publishers will be advantageous to the schools and to their budgets.

Teachers' Contracts—Offer and Acceptance

Where an Arkansas school district teacher submitted his application for reemployment for another school year at a monthly salary of $95, and the district's board, in considering the application, decided to reemploy him at $90 a month without knowing whether he would accept the cut, a written contract subsequently signed by a majority of the board members and by the teacher on his acceptance of the reduced amount, which was not thereafter ratified at a meeting of the board because the board as constituted at the time of the prior meeting did not again meet prior to the election of new members, did not constitute a valid contract between the teacher and the school district in that it was not entered into by the school board.

The action of the board at the prior meeting did not create a contract inasmuch as the board did not accept the teacher's offer without reservations. The teacher's acceptance of the reduced salary did not create a contract in that the contract executed by the members of the board was not subsequently ratified by the board at a meeting thereof.—Smith *vs.* School District No. 89; Ark. Sup. Ct., No. 4-2968, Apr. 24, 1933. (Johnson, C. J.)

Superintendents in Same School System for 32 Years

Being school superintendent is frequently a lifetime job, the records of the U. S. Office of Education reveal.

Recent collection of information for the annual educational directory showed that twenty city school superintendents in the United States had served in the same position thirty-two years.

Dean of school superintendents, in respect to continuous service, is Lawton B. Evans, Augusta, Ga. Appointed superintendent on November 11, 1882, he has administered the Augusta schools for fifty-one years.

Second in point of continuous service is Louis G. Rundlett, Concord, N. H., who was appointed August 1, 1885.

The other eighteen men who have devoted almost a lifetime to administering the schools of their communities are: W. G. Coburn, Battle Creek, Mich., appointed September, 1895; J. E. Lemon, Blue Island, Ill., appointed June, 1894; William V. Casey, Boulder, Colo., appointed in 1894; J. A. Gibson, Butler, Pa., appointed June 1, 1896; W. H. Kirk, East Cleveland, Ohio, appointed July, 1891; L. A. Lowther, Emporia, Kan., appointed November, 1896; Frederick W. Nichols, Evanston, Ill., (Dist. 76), appointed July, 1885; W. C. Bynum, Georgetown, S. C., appointed in 1897; Frank L. Miller, Harvey, Ill., appointed September, 1892; E. L. Bailey, Jackson, Miss., appointed June 1, 1900; J. B. McManus, La Salle, Ill., appointed June, 1900; A. J. Thackston, Orangeburg, S. C., appointed June, 1897; John F. Keating, Pueblo, Colo., (Dist. 20), appointed July 19, 1896; E. P. Clarke, St. Joseph, Mich., appointed July 6, 1899; George W. Hall, San Mateo, Calif., appointed Jan. 1, 1894; Frank Evans, Spartenburg, S. C., appointed June, 1895; S. H. Edmunds, Sumter, S. C., appointed in 1895, and Leslie V. Case, Tarrytown, N. Y., appointed May, 1900.

Educational Fortune Telling Is a Precarious Process

Instruments for measuring intelligence are not as reliable as yardsticks for measuring physical objects, but the best ones enable educators to refine their subjective estimates of abilities and accomplishments

By W. HARDIN HUGHES, Director of Administrative Investigation and Research, Pasadena City Schools, Pasadena, Calif.

UNDER the title, "What Does the I. Q. Really Measure?" a thought-provoking contribution to the literature of tests and measurements by Prof. S. A. Courtis appeared in The NATION'S SCHOOLS for January, 1933. Professor Courtis has again challenged "openminded investigators to study children and search for ways of helping each child make the most of his potentialities, whatever his I. Q."

Practical research workers will no doubt agree with much that Professor Courtis has said. We all realize that "the trouble with intelligence tests is more with the method of interpretation than with the methods of construction." With the mixing of fact and fancy, the trouble invariably begins. Our theorizing and fortune telling are not always as reliable as our fact finding.

Psychologic Test Scores Alone Are Inadequate

The psychologic technicians have made invaluable discoveries. They have shown scientifically the measurable differences of certain mental abilities. That they have measured completely either the latitude or altitude of intelligence, no reputable psychologist will insist. That they have measured absolutely any portion of intelligence, no rational person will contend. In fact, the psychologists have measured only certain evidences of intelligence as expressed in limited forms of human behavior.

"From one end of the school system to the other," writes Professor Courtis, "predictions of academic achievement based on intelligence tests have been disappointingly poor." Innumerable studies lead to this common conclusion. Practically all such studies have brought out the fact that psychologic test scores alone are inadequate bases for prediction. Seldom, indeed, have correlations above .60 been obtained between intelligence scores and college success. Much more frequently, however, have the correlations fallen below .40.

In an authentic list of correlations between intelligence scores and academic marks in thirty-six American colleges and universities, we find correlations ranging from a minimum of .13 to a maximum of .65 with an average of approximately .35. Another list of such correlations in forty-three

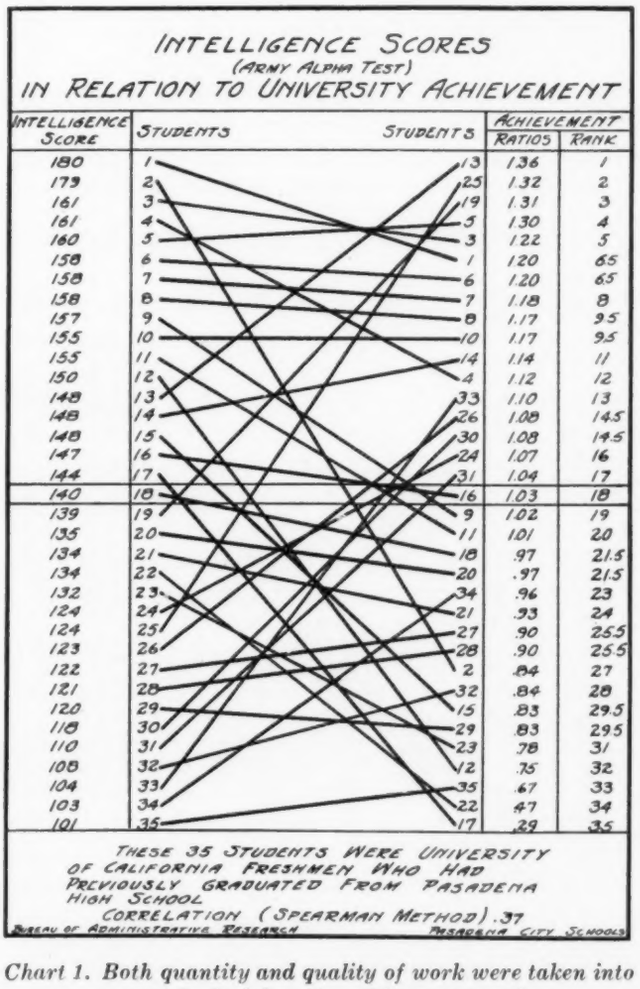


Chart 1. Both quantity and quality of work were taken into account in deriving the achievement ratios.

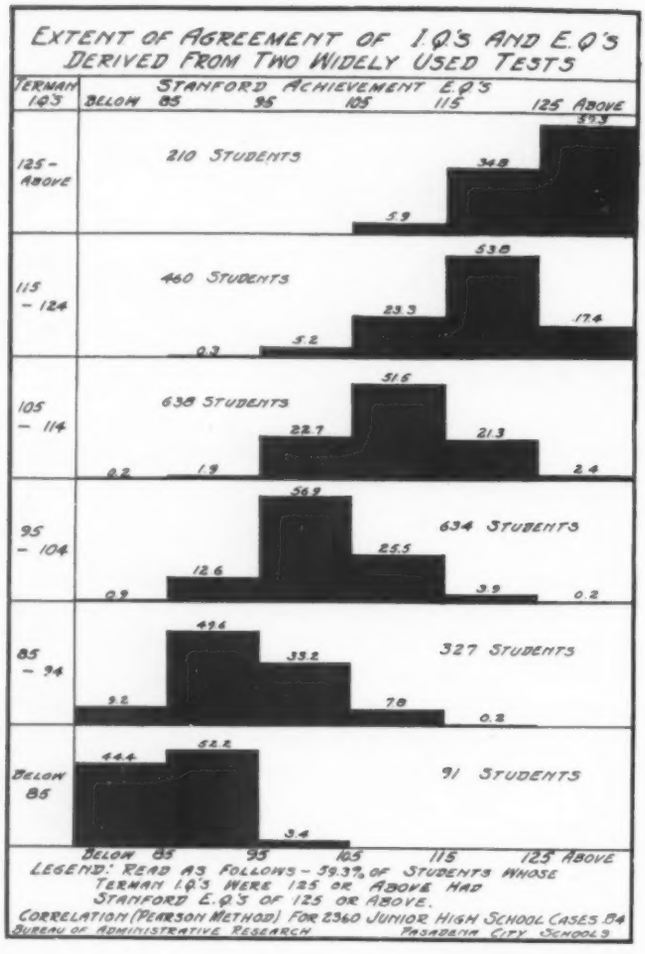


Chart 2. This graphically illustrates the fact that a correlation of .84 does not mean 84 per cent of agreement.

colleges and universities gives a median correlation of .43.

Representative findings in detailed form are set forth in Chart 1. Here may be seen the comparative ranking of thirty-five university freshmen with respect to intelligence scores on the Army Alpha Test and achievement ratios derived from total credits and marks at the end of the first semester's work at the university. Both quantity and quality of work were taken into account in deriving the achievement ratios. Determined in this way, the average achievement ratio of students was approximately 1.00.

Briefly stated, the method of arriving at these ratios was as follows: The semester marks, A, B, C, D, E and F were assigned values of 5, 4, 3, 2, 1 and 0, respectively. Semester hours of credit in each subject were then multiplied by the value corresponding to the grade received and all such values totaled for each student. A grade of C in fifteen semester hours credit would therefore total 45. This figure was taken as the unitary base upon which the individual achievements were estimated in terms of ratios.

If marks and credits earned are a measure of academic success, we must concede the possibility of serious error when intelligence scores alone are used for predictive purposes. In Chart 1, for example, Student 2 with an intelligence score of 179 fell nearly to the bottom in achievement with a ratio of only .84, while Student 25 with an intelligence score of 124 was next to the top in achievement with a ratio of 1.32. These are merely samples of outstanding discrepancies.

Needless to say, democracy must have a more reliable method of selecting high school graduates for admission to college and university. The fact that for this group of students the correlation between intelligence and achievement is .37 (Spearman method) is not sufficient. This correlation shows only a slight tendency toward agreement between the two sets of measurements, but does not tell with any degree of certainty what accomplishment to expect from any individual student.

The Reason for the Discrepancies

Some persons say that data such as those presented in Chart 1 are conclusive proof of the invalidity of mental tests. But is this a justifiable conclusion? It is probably much nearer the truth to say that when we have measured ability, we have measured only one of the important factors entering into achievement. Ability to do and doing are two different things. What one accomplishes depends upon both inborn ability and its habitual use. Habits, attitudes and interests are essential determinants of achievement. If we know these, as well as the intelligence of the individual, we are better able to predict his success.

It would indeed be surprising to find a close agreement between intelligence scores and school success when some students of average ability are using that ability to the maximum degree while other students of extraordinary ability are loafing on the job and acquiring habits and attitudes incompatible with success. Add to this the fact that school marks[1] are extremely deceptive, sometimes standing for actual academic achievement but more frequently, perhaps, representing a combination of personal characteristics, and we have a sufficient explanation for the discrepancies charted above. When college instructors, in assigning subject marks, take into account many, few or none of such factors as mastery of subject matter, industry and effort, extraordinary improvement, originality in work, maximum use of capacities, quickness in thinking, cooperative attitude, antagonizing the instructor and twenty-six other variable factors[2], which may or may not correlate

[1]Hughes, W. Hardin, Analyzing the Ingredients of Teachers' Marks, The NATION'S SCHOOLS, Dec., 1930.

[2]Hughes, W. Hardin, Coordinating Subject Marks and Achievement Marks, The NATION'S SCHOOLS, Oct., 1932.

positively with actual academic achievement, we cannot reasonably expect to find high correlations between intelligence scores and school success. But even if instructors' marks were dependable measures of school accomplishment and intelligence scores were absolute gauges of scholastic abilities, we should still find under present variable conditions of school, home and community many reasons for lack of agreement between ability and academic success.

Correlations between intelligence scores and achievement marks at both elementary and high school levels are much like those reported in the preceding paragraphs. The figures given by Professor Courtis are fairly representative. Seldom have correlations above .60 been reported. The mode of distributed correlations is usually within the .30's and lower .40's, differing somewhat from subject to subject. Dr. C. Burt of the London County Council has reported the following correlations between Binet I. Q.'s and school marks for a large number of children between the ages of seven and fourteen: composition, .63; reading, .54; dictation, .52; arithmetic (problems), .55; arithmetic (mechanical), .41; writing, .21; drawing, .15; handwork, .18.

Considerably higher correlations have been reported, however, between intelligence quotients and school achievement as measured by standardized tests. In Chart 2 may be seen the extent of agreement of I. Q.'s and E. Q.'s derived from two widely used tests. Here the correlation of .84 for 2,360 junior high school students in grades seven and eight is significant. The interpretation of this seemingly high correlation is best seen, however, in the percentage distribution of E. Q.'s at the different I. Q. levels. The chart graphically illustrates the fact that a correlation of .84 does not mean 84 per cent of agreement, as those unfamiliar with statistical interpretation sometimes think, but that the actual agreement is far less than this in terms of per cent. Note, for example, that the 638 students whose I. Q.'s lie between 105 and 115 have E. Q.'s ranging all the way from 85 to 125 and above. Only 51.8 per cent of these students have I. Q.'s and E. Q.'s approximately equivalent. Even for this 51.8 per cent, there are possible differences of nearly 10 points for individual students.

Other interesting relationships may be gathered from an analytical study of the chart. It will be noted, for example, that in the higher I. Q. levels there is a tendency for larger percentages of E. Q.'s to be less than the I. Q.'s, while in the lower I. Q. levels there is a significant tendency for larger percentages of E. Q.'s to be higher than the I. Q.'s.

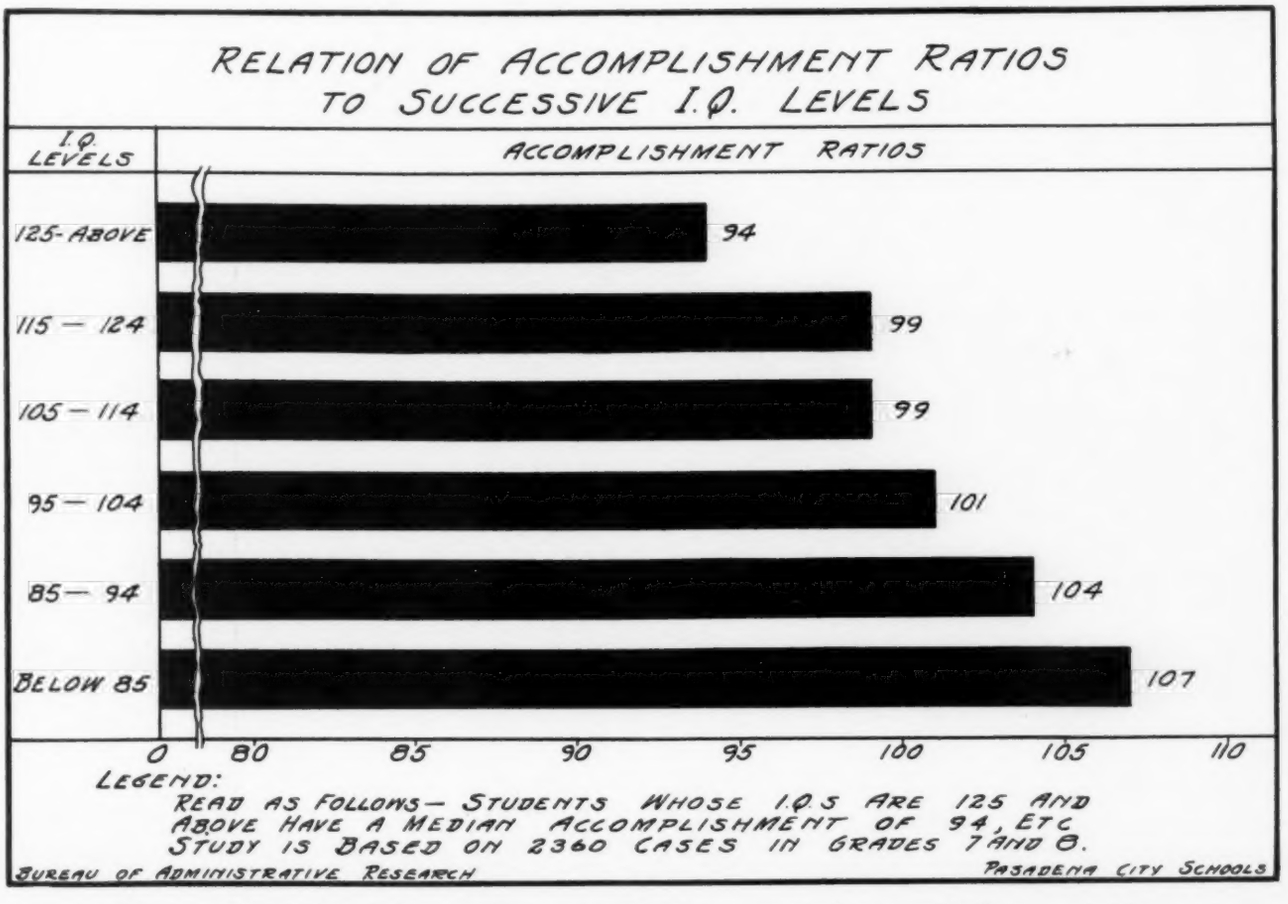


Chart 3. The relation of school achievement to intelligence quotients is graphically presented here.

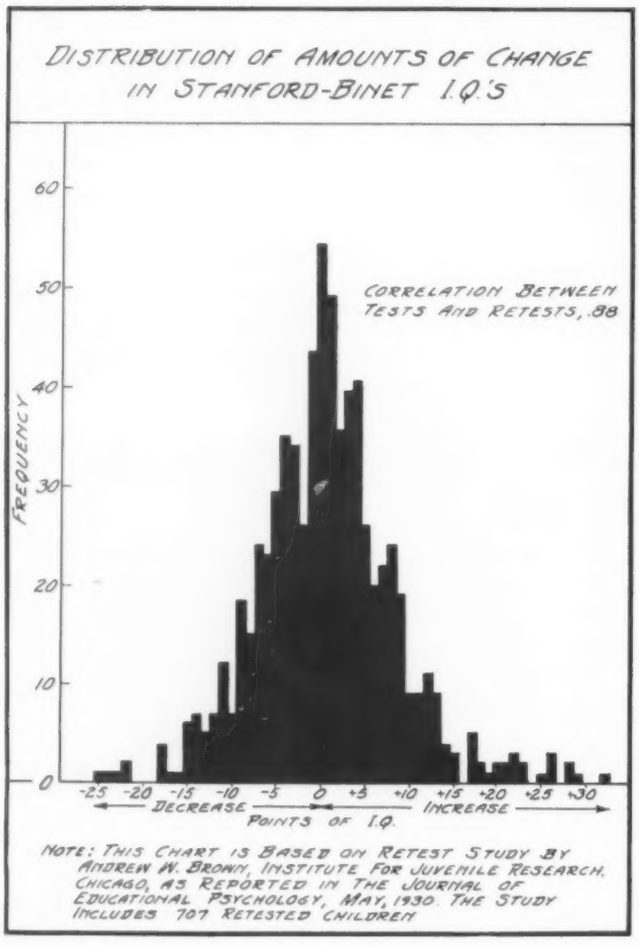

DISTRIBUTION OF AMOUNTS OF CHANGE IN STANFORD-BINET I.Q.'S
CORRELATION BETWEEN TESTS AND RETESTS, .88
FREQUENCY
60
50
40
30
20
10
0
-25 -20 -15 -10 -5 0 +5 +10 +15 +20 +25 +30
DECREASE
INCREASE
POINTS OF I.Q.
NOTE: THIS CHART IS BASED ON RETEST STUDY BY ANDREW W. BROWN, INSTITUTE FOR JUVENILE RESEARCH, CHICAGO, AS REPORTED IN THE JOURNAL OF EDUCATIONAL PSYCHOLOGY, MAY, 1930. THE STUDY INCLUDES 707 RETESTED CHILDREN

Chart 4. This illustrates the constancy of the I.Q. as measured by the Stanford-Binet individual test.

To be more specific, only 44.4 per cent of students in the lowest I. Q. level have E. Q.'s as low as their I. Q.'s. We should note also that there is no overlapping of E. Q.'s of the highest and of the lowest I. Q. levels. In other words, there is no evidence in these findings to justify the assumption that students of very superior intelligence are ever scholastic failures or that students of very inferior intelligence ever become outstanding scholars. On the basis of teachers' marks, however, it is not uncommon to find bright persons failing to pass and dull persons passing with honors. The fault here lies not in the unreliability of I. Q.'s but in the unreliability of almost every other factor.

The relation of school achievement to intelligence quotients is graphically presented in Chart 3. Here we have the relationship expressed in accomplishment ratios (A. R.), that is, as quotients resulting from dividing the E. Q. by the I. Q. While the A. R. derived in this way is none too reliable in any individual case, it has a significant value when used statistically for large numbers of cases.

It will be noted that the lowest I. Q. group have the highest average A. R. and that the highest I. Q. group have the lowest A. R. There is a gradual drop in A. R.'s from the lowest I. Q. group to the highest.

It may be true, as Professor Courtis asserts, that "the fatalistic theories of the determinists in education have become so firmly established in authoritative educational literature that the profession is rapidly developing an inferiority complex with respect to its ability to help children who have low I. Q.'s". Still the data presented here do not seem to indicate that these so-called fatalistic theories have resulted in a lack of attention to the academic needs of the low I. Q. children included in this study. Perhaps we have given too much attention to the process of bringing them too nearly up to the standards of scholastic achievement, at the same time neglecting other important considerations in education.

Contrary to Popular Opinion

It is the popular and not the scientific conception that many dull children later become brilliant. The lack of I. Q. records of boys who were unsuccessful in school but who later became famous makes it possible for popular writers to declare that dullards become geniuses and geniuses become dullards. Judged by school reputation, Darwin was below the average standard in intellect; Napoleon was mediocre in military school accomplishment; Samuel Johnson was too lazy to study; Newton was habitually at the foot of his class; Swift was allowed only by "special permission" to take his degree in college. An endless list of famous men could be mentioned whose school records were none too promising. It would probably be enlightening if boyhood intelligence ratings of Edison, Gladstone, Pasteur, Wagner, Goldsmith and innumerable other persons of similar fame could be revealed.

All the evidence of modern psychology, however, is contrary to the popular opinion that children of inferior intelligence eventually become well rounded intellectuals. The studies, likewise, of intellectually superior children carried on over a period of years have not yet revealed convincing evidence of geniuses dropping to the level of morons. Witness Dr. Lewis Madison Terman's genetic studies of genius. While the I. Q.'s of some of his subjects have seemingly fallen, none have changed in a way to justify the extreme popular opinion. The changes in I. Q. reported are probably due as much to the unreliability of measuring instruments as to actual changes in intelligence.

Any instrument of measurement is reliable to the extent to which it successively gives the same or approximately the same results. If a scale registers high in the hands of one user and low in the

hands of another, its reliability is slight. For the measurement of physical quantities, scales have been devised whose reliability is exceedingly high. The yardstick, for example, gives the same results whether applied by one competent person or another. Its reliability is, or may be, practically 100 per cent. If, however, the person who uses the yardstick is careless in applying it, or the thing measured actually varies in length from time to time, the consistency of measurement will necessarily be reduced.

Now, for the measurement of intelligence we have no instruments as reliable as the yardstick. Neither are the evidences of intelligence as static as are the objects measured with the yardstick. The Stanford-Binet test, however, with a reliability coefficient of .93, is generally recognized as one of the most reliable. Other revisions of the Binet are correspondingly high in reliability.

In Chart 4 may be seen something of the constancy of the I. Q. as measured by the Stanford-Binet individual test. It will be noted that although the correlation between the first and second tests of the 707 children included in this study was .88, the changes in I. Q. of individual children ranged from 25 points loss to 33 points gain. The average change was 5.8 points. The individual amounts of change for 58.9 per cent of the children retested was 5 or fewer points of I. Q. Other authentic studies based on the Stanford-Binet test have shown average changes of approximately 5 points in I. Q.

The reliabilities of group intelligence tests are usually much less than those of the individual Binet. In public school systems, however, it is practically necessary to rely upon the group tests of intelligence.

Statistics Are Deceptive

In Chart 5 may be seen the extent of agreement of I. Q.'s derived from two widely used group tests. It is a bit disappointing to find smaller agreement between I. Q.'s and I. Q.'s than was found between I. Q.'s and E. Q.'s. At first glance we may get the impression that the agreement is reasonably high, since the correlation between the two sets of I. Q.'s is .71; but when we note the wide distributions of one set of I. Q.'s in relation to the other, we have reason for doubt. This chart presents another excellent illustration of the fact that the statisticians have not given us any too much light on the consistency of measurements when they placed coefficients of correlation before our eyes. I do not wish to accuse the statisticians of conscious deception in this matter, but I do think that they could not possibly have chosen a more deceptive statistical figure.

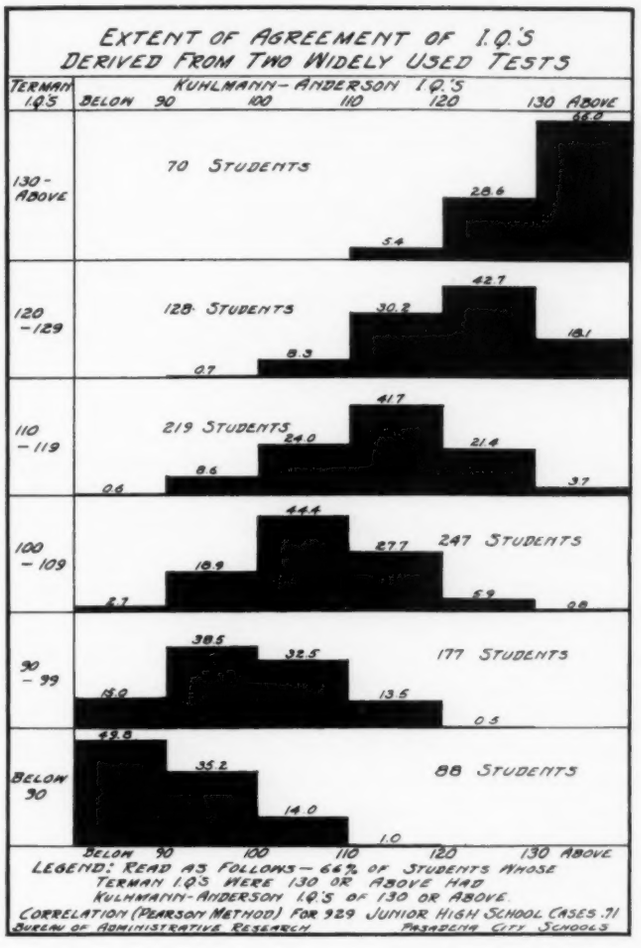


Chart 5. This shows smaller agreement between I.Q.'s and I.Q.'s than was found between I.Q.'s and E.Q.'s.

Scarcely ever have we been given a real interpretation of the coefficient of correlation. Perhaps the statisticians did not know how to do this without destroying our major illusions concerning the meaning of seemingly high correlations. A bit of eighth grade arithmetic involving some addition, multiplication and percentage reveals such facts as those presented in Chart 5. I do not know which set of I. Q.'s is better for the purposes of ability grouping. I only know that there is a smaller agreement between the two sets of I. Q.'s than a correlation of .71 would seem to indicate. If either set is used as the base, the other distributes very widely. When a Terman I. Q. between 110 and 120 corresponds to a Kuhlmann-Anderson I. Q. anywhere between 90 (or below) and 130 (or above) it would be utter folly to base too much of our educational fortune telling on a single group I. Q.

We could reasonably say, however, that a student whose I. Q. on one of these tests is below 90 is not likely to be as high as 110 on the other. We could also say that a student whose I. Q. on one of these tests is 130 or above is not likely to fall below 110 on the other. We could safely make similar

statements concerning the probable school achievement of these students as expressed in terms of E. Q. (see Chart 4) but we could speak with less and less certainty as the average I. Q. levels are approached. We are not quite ready, on the other hand, to agree with Professor Courtis when he states that "as bases for exact scientific prediction and control, they (the tests) are almost as imperfect as unaided subjective opinion." Neither are we convinced that "if a child can learn at all, he can learn to average achievement if training is continued long enough."

A Practical Aid to Understanding of Children

The development curves and statistical techniques employed by Professor Courtis in bolstering the foregoing statement are interesting but by no means convincing. The fact that the projected curves of learning of normals and subnormals eventually come together for such simple functions as knowing how many fingers are on the two hands proves little or nothing concerning the maximum learning abilities of the normal children with whom the subnormals were compared. The normals and supernormals would, under favorable conditions, continue their learning through such abstract forms of mathematical thinking as algebra and possibly geometry within the same length of time, fourteen and a half years, as that required by Professor Courtis' subnormals to learn that five and five are ten. Likewise, in the thirty-nine and a half years required for 100 per cent of the subnormals to become able to do the "absurdities" part of the Binet test, the normals, under favorable conditions, would have gone on into successful business and professional careers and would in all probability have developed, through general experience and special training, capacities infinitely beyond those of the subnormals for dealing with the "absurdities" of real life.

While deploring the deterministic tendencies of educational philosophy, Professor Courtis has advanced statistics which, if used by the determinists, would make their position doubly secure. Where would we find an ordinary, nonstatistical determinist who would be bold enough to declare, as has Professor Courtis in his developmental curves, that some persons require 45.5 years to learn certain simple facts which normal persons know in childhood? Even the statistical determinist would hesitate to predict so much with certainty on the basis of present tests which, he knows full well, are inadequate for measuring completely and accurately either the latitude or altitude of intelligence. Most of us believe, however, that the standardized intelligence test is a practical aid to the better understanding of children. But it is only one of the many scientific aids being developed in the modern school.

The data presented in the foregoing studies seem to warrant the following general conclusions:

Intelligence tests are inadequate bases for the prediction of school and college marks. This is partly due to the fact that school marks for achievement are unreliable and extremely deceptive. Even if intelligence scores were absolutely reliable measurements of mental abilities, we could not expect to find high correlations between these scores and instructors' marks.

Correlations between intelligence quotients and educational quotients are much higher than correlations between intelligence scores and instructors' marks. This is partly due to the fact that the objective test scores from which E. Q.'s are derived do not take into account the variable personal qualities that enter into instructors' marks.

I. Q.'s are most reliable for predictive purposes in the highest and lowest I. Q. levels. We have seen in the data presented here that there is no overlapping of educational achievement between the groups of students at these two I. Q. levels. In fact, there is very little overlapping of educational achievement between the combined groups under 95 I. Q. and the group above 125 I. Q. The predictive values of the I. Q. are considerably less for the 75 per cent of students whose I. Q.'s lie between 95 and 125.

A Precarious Undertaking

A correlation of .88 between the results of tests and retests on the Stanford-Binet, while high statistically considered, does not preclude the possibility of great changes in I. Q. for individual children. This fact should make us cautious about relying too completely upon the results of a single intelligence test.

The extent of agreement of I. Q.'s derived from two widely used intelligence tests was shown to be smaller than the extent of agreement between I. Q.'s and E. Q.'s. It was pointed out in this connection that the coefficient of correlation of .71 between the results of these two intelligence tests, while seemingly high, is deceptive. Incidentally, this correlation is considerably higher than the intercorrelations of many group intelligence tests reported by other investigators.

The data herein presented have significance in relation to the problems of ability grouping and of providing for the individual differences of abilities in children. Educational fortune telling is a precarious undertaking. Our best measurements, however, have enabled us to refine our subjective estimates of the abilities and accomplishments that may be expected in children.

American Schools Are Suffering From Shrunken Book Budgets

If retrenchments must be made, let school authorities separate the essentials from the nonessentials, eliminate the latter, and then institute a plan of horizontal reduction

By WILLIAM C. BAGLEY, Teachers College, Columbia University

DURING the period of worldwide depression American education has suffered heavier retrenchments and losses than has education in any other country. This fact has been worked out from information supplied by other countries to the International Institute of Teachers College, Columbia University.

In the matter of closing schools, for example, America's record seems to be unparalleled by any other important nation. Nothing of this sort has happened in Canada, Great Britain, France, Italy or Germany. Teachers' salaries apparently have not been reduced elsewhere to the extent that they have been in the United States. Reductions reported from Europe have usually followed reductions in the cost of living and have balanced such reductions. No other important country has defaulted in the payment of teachers' salaries.

Public education in this country, it has been charged, is now suffering because of its former extravagances. The high cost of education, it is maintained, has actually impoverished the people.

Soiled, torn and with complete pages missing, these books, after three years' service, are ready to be discarded.

It cannot be denied that there have been extravagances in public education, but these have been confined pretty largely to the material side. Those who are now suffering for such extravagances—the children and their teachers—were not responsible for what took place. Either the people themselves or special interests have demanded ornate school buildings and expensive gymnasiums and swimming pools. No one can maintain that American education has been extravagant in the salaries it has paid to teachers. Perhaps there has been extravagance in the construction of school libraries, but I find no evidence of extravagance in the purchase of books. That some of the vagaries of contemporary educational theory have led to waste I am willing to concede, and while the profession is partly responsible, it is a fact that the citizens in many communities have insisted that their schools keep up with all of the educational Joneses.

As for the alleged calamitous effect of the taxes raised to support education, one may well wonder how countries whose ratio of tax burden to total wealth is far higher than the American ratio can manage to keep schools open and teachers paid.

Cost of New Books Is a Minor Item

Next to the closing of schools and the suspension of teachers' salaries, American education has suffered most seriously from the curtailment of expenditures for essential materials and supplies, especially textbooks, workbooks and reference books. The book budget has been one of the comparatively minor items in the total of school expenditures, accounting, on the average, for only about two cents in every dollar of tax revenues spent on education. Due largely to severe competition among publishers, this expenditure has probably bought much more for the money than any other 2 per cent of the grand total. At any rate, American textbooks and workbooks and children's reference books are undoubtedly the best in the world.

The following facts that have recently come to my attention illustrate vividly how book budgets have been curtailed:

1. Library replenishment has virtually stopped throughout the country.

2. Classroom teachers have been so heavily handicapped that they have made desperate efforts to earn money by outside work in order to buy books and supplies for their pupils.

3. Books discarded fifteen years ago as out-of-date or otherwise unsatisfactory have in some instances been brought out of the cellar and placed in the hands of pupils.

4. Books used by many successive groups are soiled and torn and in many cases the binding is broken and the pages must be held together by rubber bands. As a result, pages are detached and lost whenever the books are used. One school principal discovered that gaps thus left in the pupils' learning actually caused failure in promotional examinations. One "repeater" is likely to cost a community more in the end than a completely new set of books for an entire classroom.

5. Educational authorities in one state report that 78,000 rural school pupils and 20,000 city school pupils have no books at all.

Conditions vary throughout the country and are naturally worst in states and communities where teachers are poorly trained and where chief reliance must be placed on textbooks and workbooks. However, there is scarcely a community in which drastic reductions have not been made. Since, even with excellent teachers, books and other educational materials are indispensable, educational efficiency is obviously reduced and the ultimate cost is quite likely to overshadow the immediate saving.

It would be wisdom and sound public policy to govern necessary retrenchments in educational expenditures by the principle of horizontal reductions. Such reduction would save all essential services. It may be possible to discover where money is actually being wasted and so institute economies that will actually mean steps in advance. The difficulty lies in agreeing upon essentials and "gadgets." About some essentials there can be no reasonable dispute. Schools must have competent teachers. The health services which have achieved outstanding results in the development of the healthiest younger generation that the world has ever known certainly must be maintained. School buildings must be kept in a sanitary condition. Books and other materials must be supplied.

A Big Mistake

A horizontal reduction would necessarily affect the efficiency of all these services, but this condition would be better than the complete cessation of any one of them. This year, of all years, school authorities will do well to survey the cuts that have already been made. How nearly have they come to a horizontal reduction? What readjustments should they make in order to produce the most equitable results?

So much for retrenchments that must be made. Yet, in view of the success of other countries not only in maintaining their educational services intact but in actually expanding these services in numerous instances, one cannot escape the conclusion that the American people, still the richest in the world, is making a sorry record in permitting the schools of the country to deteriorate so rapidly.

Happy to Say— By WILLIAM McANDREW

ALTHOUGH you may not understand genius or the way to generate it, your reading, history and biography show so many instances of it springing up due to accidental opportunity that you are pretty safe in guessing a lot of it never budded because the intellectual climate wasn't right. You as school men may not be able to create geniuses, but you can make opportunity. This is another argument for universal education. It can supply the soil and sunshine for the nurture of the seeds of genius which Nature distributes among the poor as well as among the well-to-do. Ambition to make the best of our talents for the benefit of all mankind is certainly teachable.

VERY ordinary doings written in the diary of the great Washington are studied by biographers. But we who lack eminence had better see to it that we do, and then record in our journals, things that are of themselves worth while. This practice promotes growth and makes the annual report more readable.

THERE are now tabulated records showing an almost universal tendency to stop trying and to dislike a task in which one fails. One of the greatest advances of our time has been the willingness of teachers to assume the rôle of success-promoters for children.

FOR a man to tell his mother she's the best that ever was is good for both of them. But when this is said of our alma mater, or our city, state or nation, of our police, our courts, our laws, our weights and measures, our mutual relations between employers and workers, I'm not so sure but that continued repetition of such statements has helped keep us back.

THERE seem to be two principal ways in which you can abate the irritating manner of someone who works over, under or with you. One way is to try to correct it. This commonly makes matters worse. The other way is to train yourself to be unirritated. "How can you endure his temper?" an intimate asked Bismarck, referring to William I. "As I do the weather," answered the chancellor.

YOU can determine whether your disinclination to work is laziness or real fatigue by pushing your unwilling self into a task. If after half an hour you are uninterested in going on, either you are tired and should stop, or you have a bad case of laziness and should go on. This is like telling an old squirrel from a young one. Put a nut into the cage. If the old one eats it, he's old; if the young one, he's young.

THE immense amount of world work there is yet to do to put mankind where mankind could be gives you the happy assurance that you need never be without interesting occupation. No matter how small your share seems to be at times, you can always make it more. Like the mortar carrier in the old story, you always have the knowledge that you are "building a cathedral."

GOOD resolutions are promissory notes. It's businesslike to date 'em, set a limit and discharge 'em before they are overdue.

ANOTHER comforting thought about the backwardness of this world is that no one need ever suffer dull days. There's always enough worth while work to fill them. The important thing is, of course, choosing things that are worth while.

ONE of the oldest and surest cures for low spirits is to remember you had 'em before and recovered. A man has only one fatal illness his whole life long.

A SORRY kind of law breaking is your violation of rules you make for governing yourself.

IN TIMES of depression certain vices increase; in prosperity, others. But one who wishes to exercise himself in courage can always find opportunity.

BY PRETENDING to be what you are not, you show your pupils what you are.

IF YOU know whither you are going, you waste no time puzzling which is the right road.

MISPLACED affections are never lost.

HERE'S a consolation: John Milton failed as a teacher of small boys; you are making a success of it. You are more to them than he is.

Editorials

The New Program

YEARS ago when the Department of Superintendence of the N. E. A. was relatively small and compact the annual gathering of administrators was a democratically organized working conference in which everyone had a chance to present and to discuss the various problems confronting public education. As the department grew in size, programs became more complex and the meeting was standardized into a "listening" rather than a "participation" conference. While discussion was theoretically provided for at most gatherings, the set papers in recent years have taken so much time that little or none was left for discussion.

Many educators have felt that something valuable has been lost to the profession by this change. The plan developed by President Paul C. Stetson to return the Department of Superintendence to the older form of discussion programs at Cleveland in 1934 cannot help but meet with much favor. The early organization of seven major discussion groups around general fields of problems and the beginning of a general work program eight months before the next meeting may result in a more vitalized program.

Lo, the Poor Statistic!

THE futility of a purely statistical approach to the problem of public education was never more completely demonstrated than it has been within the past three years. Those numerous extralegal organizations that have sprung into existence overnight, each with apparently ample funds, to save the people from their legally elected representatives, have given ample proof of its absurdity.

Public education is one of the four essential activities of a democratic state. It must be approached, considered and studied from the aspects of function and scope within the essential requirements of a given cultural pattern. It can never be solved by a rear end study that includes only the application of mathematical procedures.

The roots of our system of free public education, open to all on the basis of ability rather than birth or economic condition, are deeply intertwined in our basic philosophy of social organization. Any fundamental consideration of change must proceed from philosophy to practice instead of attempting to judge practice as an isolated phenomenon. The need today is for a clear statement of essential social requirements and objectives so plainly stated that the average man and woman can understand them. An orderly survey of practice may then logically proceed on the basis of social need.

The general depression-analysis procedure has been exactly the opposite. The statistical view of education, in dollars and cents and in fractional use of the tax dollar has been the element uppermost in these so-called analyses of practice. The general mode of attack appears to be: public expenditures are too large. A statistical analysis indicates that public education spends more than one-third of the tax dollar. Therefore public education must be severely pruned, to provide these required savings. Debt structure has not been examined and refunding possibilities have not even been considered, despite the parallel practices going on in industry and commerce. The legal requirements for education have not been studied, the size and complexity of the problem, its social significance and importance have not been considered by the accountants and other lay lobbyists who are directing the activities of the "super-governmental agencies" now rampant. Purpose has not been largely ignored.

To any student of education familiar with current activities of these various interest-groups the reason is quite obvious. These agents are not capable by training or by the direction of their superiors to engage in such study. They do not have the slightest conception of what it is all about. Armed with ignorance and a naïve insouciance, they ignore blithely the fundamental principles of social investigation and obtrude their meager routine of mechanical statistics. The apparent lethargy of the professional group has permitted this destructive procedure to sweep forward without much impediment and without the enlightenment of the people. The profession is fortunately awakening to what is going on and is carrying its message directly to the people, in terms of what the future holds for the children if they are robbed of their democratic birthright. Encouragement lies in the fact that the American Federation of Labor and the American Legion have discovered these dangerous tendencies and have aligned themselves definitely and whole-heartedly behind the democratic tradition.

As members of the professional group we are responsible to the people for information concerning the purpose, value, conditions and needs of

public education. We can tell the story simply but effectively. The hampering restrictions and the senseless cutting of school budgets beyond actual necessity do not mean much saving to the average man and woman whom these "savior" organizations claim to represent. In reality they mean the whittling away of opportunity for their children. Those of large means behind these movements can easily provide expensive private education for their own children but the children of the people will be hampered by inadequate education. If the people in this present bewilderment sacrifice their own schools, then the end of the democratic tradition cannot be far off.

Once this true state of affairs is made plain to parents, we believe that the rigorous popular protest will rather quickly put an end to much of this "sniping."

As an essential social activity, public education can be considered and judged only in terms of the service required and the service rendered. It cannot be decided in terms of groups of figures, no matter how charmingly they are arranged by professional lobbyists.

Free Trade in Brains

THE question raised by Dr. Casimir D. Zdanowicz, University of Wisconsin, deserves deep consideration. It is the contention of the professor that there should be "free trade in brains," or that restrictions now placed on alien teachers by the immigration act of 1924 should be modified.

The tendency to exclude or make it difficult and annoying for alien scholars to come to this country started with the hysteria developed by our propaganda specialists during the World War. These parochial tendencies were further crystallized by the 1924 statute enactment with respect to "alien quotas."

The foreign scholar and research specialist have contributed much to the development of higher education in the United States. In certain instances the employment of alien teachers in secondary education, particularly in the field of languages, has not been without its distinct advantages. The continued practice of placing annoying barriers in their way is distinctly detrimental to the development of education and international good will.

We agree heartily with the professor that "there should be no barrier to the importation of brains into America. For educational reasons they should be admitted—the teacher, the student, the book, the educational film."

Child Labor

ONE concomitant of the depression has been the return on the part of certain manufacturers to the exploitation of child and woman labor through the "sweating process." Two things are apparently responsible for this condition. The restriction of appropriations for public education and the curtailment or elimination of the follow-up service of enforcement of compulsory education laws have permitted thousands of children to leave school without questioning. The dire economic condition in which the depression has placed so many families in these Eastern manufacturing centers has forced families, including the children, to accept the wages prevailing under "sweating" methods.

It is a strange paradox that at a time when millions of men are out of work and there is a great superabundance of adult male labor, women and children should have been chosen as the victims of exploitation. The facts are incontrovertible, despite the incongruity involved. Under these circumstances it seems that the schools might be helpful not only in pointing out these conditions but in attempting to arouse local public opinion against them. The profession might be of further direct aid as individuals by refusing to buy goods, no matter how tempting the bargain, made under sweat shop conditions. Steady and open refusal of goods of this type will do much to convince merchants of the undesirability of handling such merchandise. Unusually low prices should be looked upon with grave suspicion. We cannot afford low prices at the expense of the health of our women and our children.

Worthy of Mention

WHEN the history of the economic depression is finally written much honor must be given to the public school teachers throughout the country who, on their own initiative, developed excellent organizations for relief.

No extended reference need be made here to the extra teaching services rendered, without pay in many cases. That contribution may be considered as a definite professional responsibility. The activities to which we refer include those normally carried on by the community directly or by extra-legal organizations, to provide food, clothing and shelter for those temporarily in need of help.

Early in the depression the strain placed on organized public welfare units and on such organizations as community chests, indicated their inability

to cope with the terrific emergency problems without aid from other sources. The teaching profession as a whole rose to the occasion. By aiding existing organizations, by conducting surveys of social inadequacy within the schools, by providing clothing, especially shoes, and by paying the cost of feeding children in school cafeterias, the teaching profession has made it possible for tens of thousands of children, particularly in large city districts, to continue in school under proper physical and social conditions.

Although the teachers gave freely of their own slender resources for these purposes, probably they could not have carried on the work so extensively without the aid of those children within their buildings in more favored circumstances, who also helped greatly. Projects of many types, from dramatics and football games to community bazaars, were successfully carried through and the proceeds used to raise funds to buy food. Gifts of clothing and other necessities also helped the cause.

In more than one sense these activities have formed one of the real contributions of the depression. They have brought the school closer to life than it has been since the World War. They have created in both the children and the teachers a fuller realization of social responsibility. The crowning beauty is the spontaneity with which the teachers in each individual building sensed and met the school's responsibility to the community, without ponderous orders or cumbersome red tape. The teachers' contributions have been outstanding and the teachers have grown to a new stature in their communities.

The New Commissioner

THE appointment of Dr. George Frederick Zook as United States Commissioner of Education has been received with satisfaction by the profession as a whole. President Roosevelt has carried out fully his tacit promise that the office would not be made a political football. He passed by the half dozen self-starting candidates who had waged active underground campaigns and chose Doctor Zook after consultation with many leaders in education.

Like Dr. William John Cooper, the new incumbent is well fitted for this important leadership position. With a rich background of experience as a division chief in the Office of Education, supplemented by a successful career as college executive and a broad knowledge of the field through participation in extensive surveys, the new commissioner brings with him adequate equipment for his important work. He holds, in addition, the thorough respect of all educators who know him.

The NATION'S SCHOOLS is happy to have fought hard to prevent the position from becoming purely a political reward and extends to Doctor Zook its best wishes and assurance of wholesome cooperation in his program.

Let's Have Leadership

MANY school executives are inclined to follow meekly the demands of extralegal groups and continue to force teachers' salaries below any point of necessity under current conditions. Local taxpayers' leagues appear to be insisting that school districts live within the actual collections rather than within the official levy of the property tax.

The following procedure appears to be the one most generally followed: Teachers' salaries are prepared on the basis of the already adopted 10, 15 or 20 per cent cuts under the 1930-31 payments and the general tax levy is set on this basis. The probable rate of delinquency is determined in advance and the actual contractual payments for the ensuing year are then further reduced from budget figures by the proportionate amount of the anticipated delinquency. The total additional salary cut varies from 10 to 40 per cent. In some cases the superintendent's salary does not suffer proportionately.

This tendency to make the teachers take up the total delinquency in real property taxes instead of spreading it equally over all budget divisions is indefensible. Its enthusiastic reception by many superintendents and their subsequent aggressive activity in forcing teachers to accept it raises the question of the value of their leadership.

A much more equitable and valid procedure would be to lay the entire situation before the teachers, explaining conditions in detail and asking them to cooperate by accepting notes, bearing a small rate of interest, against these delinquent taxes. As late returns were paid, the notes could be retired. There could be a definite understanding that these evidences of indebtedness would not be placed in circulation but would be held by the individual until delinquent taxes were paid. These delinquent taxes will be paid despite strenuous legislative efforts of speculative realtors to secure "forgiveness."

The cutting of teachers' salaries has already gone too far. The spectacle of opportunists in the superintendency who deliberately go beyond need in curtailing teaching rewards cannot be too thoroughly and completely condemned.

Chicago Meeting Second Largest in History of N. E. A.

Jessie Gray, the new president.

MORE than 15,000 registrants at the seventy-first annual meeting of the National Education Association held in Chicago, July 1 to 7, made it the second largest meeting of school teachers in the history of the organization.

Joseph Rosier, president, State Teachers College, Fairmont, W. Va., and president of the N. E. A., presided at the principal gatherings of this unusually large assembly. The general convention theme was "Evaluating American Education" and under it hundreds of papers relating to all phases of the problem were given by classroom teachers, administrative and university specialists, and by nationally known laymen.

Dr. Glenn Frank, president, University of Wisconsin, Dr. Robert M. Hutchins, president, University of Chicago, and Governor Paul V. McNutt of Indiana, keynoted at the general sessions. The general tenor of the meeting was marked by a quiet but sincere optimism.

A number of important committee reports, representing in some cases extensive work and effort, were presented at the business sessions for consideration. Included among these were: the report on retirement allowances and their present status; the tentative report of the committee on social-economic goals of America; the report on international relations; the joint report of the American Medical Association and the National Education Association on health problems in education; resolutions of the National Council of Education; resolutions of the National Education Association; the report of the legislative committee; the financial report, and the secretary's annual report.

The contest for the 1934 presidency brought East and West into opposition with one candidate each, as announced at the 1932 meeting at Atlantic City, N. J. The result of the balloting gave the office to Jessie Gray, a teacher in the Philadelphia Normal School, and for many years prominent in National Education Association work.

Of the hundreds of papers read it is impossible to do more than to mention briefly a few of the outstanding presentations. These will be given alphabetically.

Charles C. Barnes, director of social sciences, public schools, Detroit, spoke of the importance of visual aids in teaching the social studies. He said in part:

"The social studies classroom in the modern school is a laboratory. In it are collected such materials as will give the child the sensory experience necessary to understand the concepts to be learned. Visual education has demonstrated its values. In order for it to become all that it is capable of becoming, teachers must have adequate preparation and a profound knowledge of the

philosophy that underlies learning through the senses. Recent experiments in education show that visual and other sensory materials help in instruction in three ways: (1) they effect an economy of time in learning; (2) they enrich instruction, and (3) they help to develop correct concepts."

As official host to the visiting teachers, William J. Bogan, superintendent of schools, Chicago, was a busy individual and was in constant demand. In speaking before the Department of Vocational Education he visioned future needs in these words:

"Sooner or later society will awaken to the need of a free public education far beyond the compulsory school age so common in most of the states today. The economic changes made by inventions and scientific discoveries are so numerous that the world is dazed by the results. In other days, slow adjustment to new conditions was possible. Now all is changed. Inventions have made man an idler on an empty stomach. Less than twenty years ago, vocational education meant education and training in the skilled trades. Today vocational education is entering a new phase. If vocational education is to minister to changing needs, it cannot set itself up as a static institution. It must look upon itself as a clearing house, receiving and passing on all the educative forces of the community. With the disappearance of juvenile labor and old occupations society is faced with the problem of training and retraining for vocation, avocation and leisure. If the schools do not educate and care for the youth of the land what will become of them? Society is facing a choice for youth. Will it choose more education or will it let youth take the road of idleness and crime?"

Importance of Mental Health Stressed

W. R. Davies, superintendent of schools, Superior, Wis., believes that well balanced mental health is essential to teaching personnel, particularly elementary school principals, if the modern program of education is to be carried out successfully. He suggested five points as including: a calm philosophic outlook on life; an unbounded enthusiasm for the activities of the school; a sublime faith in the potentialities of the school's pupils and teachers; humanness, and a firm belief in the ultimate good of human existence.

Virgil E. Dickson, assistant superintendent of schools, Berkeley, Calif., urged the coordination of all community agencies for the mental health of young people. In his paper he discussed the organization and the work of the Berkeley council.

Of special interest and significance to teachers was the report of the committee of one hundred on retirement allowances. After examining tendencies in different states, the committee supplemented the general principles of retirement allowances by urging that: (1) the integrity of the retirement funds must be preserved; (2) adjustments, even though temporary, in the administration of the retirement funds, should be based only upon expert advice and careful study; (3) expert supervision should govern the investment and accounting of retirement funds; (4) retrenchments should not lead school systems to retire competent, experienced teachers, involuntarily, immediately upon attaining the age for optional retirement, and (5) school systems at present unable to adopt retirement provisions for their employees, should continue, nevertheless, to study the problem.

The Senior High School Curriculum

Dr. Leonard Koos, University of Chicago, presented conclusions from his survey of secondary education with respect to the changing curriculum. He said:

"At the senior high school level a chief change is in the addition of many new courses, the additions affecting all subject groups, but science, mathematics and foreign language less than others. The trend in required work at this level is away from mathematics and foreign language and toward English, the social studies and physical education. The displacement of specialized by general courses has progressed more slowly than at the junior high school level. An investigation of the work actually taken by graduates while in high school shows a striking shift away from foreign language and mathematics and toward English, the social studies and the nonacademic subjects."

Dr. H. H. Linn, assistant superintendent of schools, Muskegon, Mich., offered six points for the consideration of boards of education in managing and protecting school funds. These include: (1) a complete and well developed system of financial accounting; (2) an annual audit of financial accounts by competent auditors from outside the regular school system; (3) a well rounded program of publicity that informs the general public not only how the school funds have been spent and handled, but also how the officials propose to spend the moneys in advance; (4) the bonding of all individuals directly responsible for the proper care and management of school funds, and by whom an act of negligence or wrongdoing may result in a monetary loss to the school district; (5) the development of, and adherence to a carefully worked out financial budget, and (6) the selection of a strong depository with adequate security for the funds deposited therein.

Austin H. MacCormick, assistant director, U. S. Bureau of Prisons, brought significant data before

the convention concerning the extent and importance of the problem of educating the prisoner. He stated:

"Among the most fruitful fields of effort for those interested in the education of adults is the American prison. In the institutions for long term prisoners alone there are 150,000 men and women, and the population of short term institutions totals nearly half a million. To those who wish to join in the war on crime by use of one of our most constructive agencies, educational work for prisoners presents a striking opportunity. In the greater number of our prisons there is no educational program worthy of the name. In my opinion, there will be no substantial extension of educational effort in this field on the initiative of prison officials. Leadership must be assumed by educational authorities from outside the walls. Those interested in adult education have already given their backing to the movement to educate prisoners. Continued effort will gradually overcome that official apathy which is the chief obstacle to prison education. The most effective educational programs in state institutions are those developed with the aid of state educational authorities. San Quentin, where over half the prisoners are studying, offers a striking illustration of what cooperation can accomplish. Here the state department of education, the University of California and the state library work with the prison authorities."

An Important Task for Education

Arthur B. Mays, professor of industrial education, University of Illinois, could see "no indications of a lessening need for industrial education of a high order and for training in mechanical skill in the years just ahead. We face today another great era of industrial growth, of invention and of expanding opportunity comparable in magnitude and significance to that following the depression of 1873. It is not unreasonable to expect that the great Century of Progress Exposition will mark the close of an era and the beginning of a new day in the same sense as did that other great centennial exposition, the World's Fair of 1876, from which many of the most characteristic factors of modern life are dated. Industry today requires, more than ever before, technical knowledge and versatility of skills. The great task of the industrial-education forces of the nation is to provide workers possessing these qualities."

Clare Symonds, Quincy, Ill., advocated giving more attention to geography at the senior high school level. "The aim of geographic training at this stage should be to stimulate interest in the problems, relationships and needs of all people. Such an interest is vital in the development of fair-mindedness, sympathy and breadth of view. Appreciation of mutual dependence is the best foundation upon which to build up an interest in other people, hence the geographic basis for such an appreciation should be provided. Knowledge of natural environment—as it provides opportunities or imposes handicaps—will contribute to an understanding of the interdependence of human beings."

Visual Aids Valuable in Teaching Process

James E. Rogers, director, National Physical Education Service, listed some of the outstanding developments in health and physical education as follows: "(1) that the health service program of schools is a combined responsibility of home, community and school; (2) that the health service work within the school is not a medical, but an educational problem—hence it comes under the general supervision of the educational administrators—superintendents and principals; (3) health education—instruction in hygiene or healthful living—is not concerned with old-fashioned anatomy and physiology, but with wholesome living. There have been changes in the content of health education texts. We are not concerned with the knowledge of subject matter so much as with healthful living through right habits and wholesome attitudes."

Albert Lindsay Rowland, president, State Teachers College, Shippenberg, Pa., believes that:

"Visual education is an inevitable feature of the teaching processes. Whenever and wherever it occurs and as far as it stands out from other forms of education it is an attitude of mind and point of view rather than a distinct subject of the curriculum. Everything may be taught in whole or in part through visual aids and in fact in the larger sense education has always been visual. The blackboard is perhaps the most common piece of school apparatus in the world and is essentially a visual aid. It has no meaning except as it presents a visual impression to the pupils."

Dr. Ray P. Snyder, director, rural education division, New York State, said:

"The rural school problem is an economic problem. School finance consists of at least two factors —wealth and organized ability to use wealth wisely and efficiently. Quality of instruction is dependent upon both factors. People want trained teachers when they are so organized that they can express their desires in a community of interest by the selection of efficient school officials. Up to its capacity the small school is not inherently weak. It is what lies back of the small school—the district unit of administration—that is weak. Some small schools are very progressive schools."

Your School—
Its Construction and Equipment

A Department Conducted by CHESTER HART, B.Arch., Chicago

Adjustable Heights for Stools and Chairs

A stool or chair that places the individual at an exact level, and in correct height relation to the desk or table greatly relieves muscular and eye strain. The only possibility of obtaining this correct relation where many pupils must use the same stools is by adjustable height seats.

The Ever Hold stools made by the Kewaunee Manufacturing Company, Kewaunee, Wis., allow an upward adjustment from any fraction of an inch to full elevation. With this stool no compromise height need be accepted by any pupil because of his inability to find a stool to fit his stature. The height adjustment is made without the aid of

tools, each pupil making the change for himself as he enters the classroom. The adjustment is made easily and quickly.

The seat is raised by placing the foot on the lower strut of the stool and lifting the seat to the desired height where it remains automatically locked in place. The seat is lowered by first raising the seat to full height and then pushing down until the bottom of the seat rests on the frame. The locking device consists of small steel balls that wedge between the steel lock rod and the tapered chamber of the lock box. An upward movement

releases the steel balls and a downward movement wedges the balls and locks the seat in place. The locking device does not require either oiling or maintenance.

The stools are made with either three or four legs, of ⅞-inch seamless steel tubing, arc welded. They have either 13½-inch wood or 13-inch metal seats, which are adjustable from 18 to 24 inches or 22 to 30 inches. An olive green shade is used as a standard finish on the stools. Stools with aluminum frames and wood seats are also standard equipment.

Chairs are made with the same adjustable features as the stools. Body form self-adjusting backs, and either stool seats or body form seats may be had. The chairs with foot rests have a height adjustment of 25 to 35 inches and 22 to 30 inches. There is one model that is not equipped with a foot rest, and this model chair comes in standard chair height.

A Machine for Cleaning Blackboard Erasers

To clean blackboard erasers by knocking them together or beating them against the walls is a disagreeable task and is also unhealthful. This practice can be eliminated altogether by use of the cleaner which has been placed on the market

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by the Singer Sewing Machine Co., New York City.

The cleaner operates on the vacuum principle, it being necessary only to pass the eraser lightly across the stationary bristles of the machine while a powerful air suction draws off all the chalk dust and deposits it in a bag of special dustproof material. To provide for erasers that have become thoroughly impregnated with dust and require special cleaning, an aluminum finger is inserted between

(c) The S. M. Co., 1933

the felt strips and the entire length of the eraser is passed through the machine. This permits the strong air currents to clean deeply between the felt sections.

The cleaner is light and easy to carry about, it being necessary merely to attach the long kinkless rubber covered cord to the nearest electrical outlet, or it can be fastened in a permanent place on the wall or on a bench or table. The cleaner's powerful electric motor is fitted with ball bearings which are packed with lubricant and require no attention. A special air cooling device eliminates overheating and the dust bag is quickly removed and put on and requires only infrequent emptying.

A New Feature in Motion Picture Cameras

A small sized motion picture camera using 16 m/m film of the Kodacolor, panchromatic or supersensitive type is being made by the International Projector Corporation, 90-96 Gold Street, New York City. The film is carried in a magazine which may be removed from the camera at any time or any place regardless of the amount of film used. The unused film will not be wasted because the same magazine may be reinserted into the camera, and another section or the entire load exposed. The

interchangeability of the various types of film allows the use of as much or as little film of exactly the right kind as is needed to meet a given situation. Loading the 16 m/m camera is even simpler than preparing the ordinary photographic camera because no threading of the film is required.

The Simplex Pockette Camera weighs only thirty-seven ounces, and is equipped with a variable speed indicator, single picture control, double spring motor, and an automatic stop device which allows the operator to predetermine the footage of film to be exposed on the subject. The camera fitted for Kodacolor is supplied with an f 1.9 lens and accessory filters. Other models are the same in construction, but are supplied with Kodak f 3.5 or Hugo Meyer f 2.8 lenses.

The simplicity of operation is a feature.

NEWS OF THE MONTH

Day of Celebration Held at Stanford University in Honor of Dean Cubberley

Dr. Ellwood P. Cubberley has received congratulations from his friends, from his colleagues and from the teaching profession throughout the nation. The tributes that have been paid to this dean of American educators during the past year or two culminated finally on his sixty-fifth birthday, June 6, in a day of celebration at Stanford University, on the occasion of his retirement as dean of Stanford School of Education. The program which had been arranged by Doctor Cubberley's colleagues represented a conscious attempt to reflect, as clearly as possible, the character of the man and of his contribution to education.

The day's proceedings included a morning program, a luncheon and an evening banquet program—each designed for a special purpose.

It is rarely the lot of one man to receive such tributes as were paid to Doctor Cubberley. Joseph Marr Gwinn, superintendent of schools, San Francisco, representing the National Education Association, presented a life membership in that association—the third time such an honor has been bestowed; William Webb Kemp, dean, school of education, University of California, presented a beautiful plaque from the National Society of Phi Delta Kappa; Dr. John C. Almack presented a handsomely bound memorial volume which had been written by former students and friends; Dr. Walter C. Eells, Stanford University, presented a bound volume of letters from Doctor Cubberley's friends; Dr. Gilbert Wrenn presented a fund which had been raised among Doctor Cubberley's students and friends to establish a Cubberley lectureship in school administration; Dr. William Proctor presented a portrait of Doctor Cubberley which was painted recently by S. Seymour Thomas. In accepting the latter two gifts for the university, President Wilbur expressed appreciation of the university for the gifts and for the long and worthy service of the man to whom they were a tribute, and ended by reading a telegram from Nicholas Murray Butler, president, Columbia University, stating that Columbia's medal for achievement in education had just been bestowed upon Doctor Cubberley.

During the evening there was a slightly tense moment for Doctor Cubberley when Dr. Henry Suzzallo, president, Carnegie Foundation for the Advancement of Teaching, one of Doctor Cubberley's first students, rose to pay tribute to his former teacher. Doctor Suzzallo's analysis of Doctor Cubberley's contributions was brief, clean-cut and full of dignity and fine praise, without being effusive.

The program, presided over by Dr. Jesse B. Sears, Stanford University, was intended to show what the profession thought of Doctor Cubberley. At the end, Doctor Cubberley was introduced in the midst of ringing cheers. After acknowledging the many tributes received, he spoke for some minutes of his own life work at Stanford in its relation to the work of building a science and profession of education. Doctor Cubberley's later comment on the day's proceedings was: "It was not only a great day for me personally, but much more a great day for us all and for the cause we represent. Education as a subject and as a profession will stand higher, not only here but throughout the nation, as a result of what you brought about. What I liked most, I think, was the air of restrained dignity that characterized it all."

Teacher Health Program Urged for New York City

A program to improve the health of New York City's public school teachers is urged by Dr. Leon W. Goldrich, director, Bureau of Child Research, in a survey included in the annual report of William J. O'Shea, superintendent of schools. Doctor Goldrich contends that much of the mental progress of boys and girls depends upon the health and consequent attitudes of the teachers under whom they study.

The survey also recommends an increase in the number of manual training classes in the lower grades.

Child Development Studied at Iowa Conference

The seventh Iowa Conference on Child Development and Parent Education was held in Iowa City, Iowa, June 20 to 22. The conference emphasized the place of the public school in child development and parent education, and men and women of prominence in the fields of child welfare and parent education were among those who took part in the program.

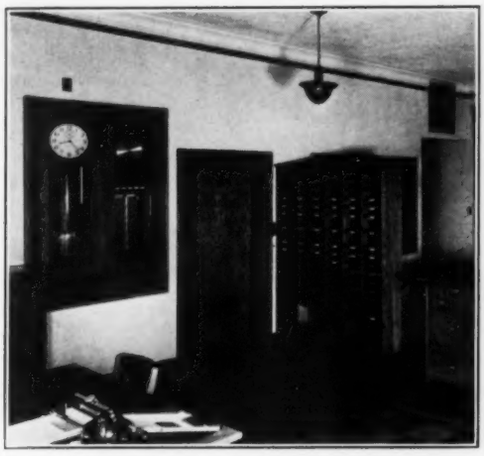
The conference was sponsored by the Iowa State Council for Child Study and Parent Education, with the cooperation of the Iowa Child Welfare Research Station and the extension divisions of the University of Iowa, Iowa State College of A. and M., and Iowa State Teachers College.

Five-Year Report Reveals Growth in New York Schools

Approximately 200,000 additional seats were provided in the New York City schools during the five-year period from 1927 to 1932, according to the annual report of the superintendent of schools. Enrollment in the elementary and junior high schools increased nearly 18,000 during the period but due to interborough shifts in population, nearly 56,000 additional seats were required in the four boroughs, exclusive of Manhattan. In fact, Manhattan showed a loss of about 38,000 pupils, while Brooklyn required new accommodations for between 25,000 and 30,000 to meet a net increase of only 9,000. A reduction was also effected in the number of pupils on short time in the elementary schools, from 46,345 to 20,015, a decrease of 26,330.

The report shows provision in the high schools to accommodate more than 41,500 additional pupils in the five-year period, but it also shows an increased enrollment of more than 70,000.

It is evident from the figures revealed that the board of education is providing accommodation for new centers of population rather than for enlarged enrollment. Establishment of 445 vacation playgrounds and playground annexes for the summer has been approved, also the establishment of twenty-six play schools for the all day care of children at institutions.



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Today's school time is more valuable than ever before . . . each minute saved and used to better advantage helps to reduce the teaching cost per pupil.

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GENERAL OFFICES
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Branch Offices and Service Stations in all Principal Cities of the World

Cleanliness Facilities

mean a better attendance record

SURELY, it is the school's moral obligation to encourage habits of cleanliness. Running water goes without saying. But also there should be ample supplies of soap and towels to make it easy for pupils to wash their hands frequently.

Moreover, school authorities are becoming more and more aware of a direct relation between cleanliness at the school and the school's attendance record. This applies to cleanliness in school surroundings as well as to personal cleanliness.

Here is a fundamental principle of school management that should not be lost sight of even in the face of the most drastically reduced budgets. It deserves thorough study on your part. Perhaps there is a way to raise cleanliness standards without increasing present costs.

The Colgate-Palmolive-Peet Company, through its research and development department, has made a thorough study of cleanliness as applied to the individual and the building in which he is housed.

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In the Educational Field

A. B. DAVIS has been elected superintendent of schools, Stoutsville, Ohio, succeeding D. F. STONE.

GEORGE NORTON NORTHROP, who resigned recently as headmaster, Chicago Latin School, Chicago, has been appointed headmaster, Roxbury Latin School, Boston.

H. S. CARROLL, superintendent of schools, Granville, Ohio, for the past three years, has been elected superintendent of schools, New Philadelphia, Ohio, succeeding F. P. GEIGER, resigned.

S. B. BONHAM is the new superintendent of schools, Niles, Ohio, succeeding R. J. KIEFER.

H. E. ROBINSON has been elected superintendent of schools, Detroit, Tex., succeeding B. YOUNG, who has resigned.

CHARLES BUTTERFIELD has been elected superintendent of schools, Corunna, Mich., to succeed B. M. HAMILL. MR. BUTTERFIELD was formerly associated with the school system in Grand Ledge, Mich.

VINCENT M. MCCARTIN is the new superintendent of schools, Lowell, Mass.

PHILIP C. NASH has been appointed president, Toledo University, succeeding the late DR. HENRY J. DOERMANN. MR. NASH has been director of the League of Nations Association, New York City.

C. R. DUSTIN has been elected superintendent of schools, Ravenna, Ohio, succeeding O. E. PORE, who resigned to become superintendent at Newark, Ohio.

EDWIN L. DALEY, supervisor of grade schools for the past fifteen years, has been elected superintendent of schools, Circleville, Ohio, succeeding J. O. EAGLESON.

ALBERT E. WRIGHT is the new superintendent of schools, Gibsonburg, Ohio, succeeding W. E. FAUSEY, who has been named head of the school system, Clyde, Ohio.

DR. JOHN E. GRANRUD has been elected superintendent of schools, Springfield, Mass., to succeed DR. Z. E. SCOTT, who will retire in September.

MARTIN B. TRAVIS has been appointed superintendent of schools, Hinsdale, Ill., succeeding ARTHUR F. COOK. MR. TRAVIS has served for fifteen years as superintendent of schools, Iron Mountain, Mich.

A. E. BREEDEN has been appointed superintendent of schools, Jasonville, Ind.

DONALD CRISE has been named superintendent of schools, Pulaski County, Indiana.

JEROME BURTT has been appointed supervisor of secondary education for Massachusetts. He will occupy the post left vacant through the resignation of FRANK P. MORSE, who will retire in September.

H. R. TAUBKEN has been elected superintendent of schools, Fort Loramie, Ohio.

E. P. SMITH, formerly superintendent of schools, Martin, Tenn., has been named head of the school system, Milan, Tenn.

O. A. BJORKLAND has been elected superintendent of schools, Bancroft, Mich.

OMER T. KENT, superintendent of schools, Noblesville, Ind., for the past two years, has been appointed head of the school system, Middletown, Ind., succeeding A. F. BYRNE, who has been elected superintendent of schools, Henry County, Indiana.

V. A. MASSER was recently elected superintendent of schools, Slater, Iowa.

DR. CLAUDE S. CHAPPELEAR, dean of men, Illinois College, Jacksonville, has been appointed superintendent of schools, Galena, Ill.

ELMER J. OAS, St. Peter, Minn., has been elected superintendent of schools, Bessemer, Mich.

HORACE B. SMITH, who has been associated with the school system in Trezevant, Tenn., for the past three years, has been elected superintendent of schools of that city.

LAURENCE O. THOMPSON, formerly superintendent of schools, Walpole, N. H., has been elected to head the school system in Keene, N. H., succeeding WALTER E. HAMMOND.

ELROY H. SCHROEDER has been elected superintendent of schools, Grand Forks, N. D.

HAROLD J. WILLIAMS has been elected superintendent of schools, Spencer, Iowa, effective July 1.

SAMUEL ENGLE BURR, superintendent of schools, Glendale, Ohio, has been granted a year's leave of absence for graduate study at the University of Cincinnati and Teachers College, Columbia University. WILLIAM SLADE, JR., has been named to serve as acting superintendent during MR. BURR'S absence.

C. WILLARD SMITH is the new superintendent of schools, North Kansas City, Mo., succeeding J. R. CLARK.

A. M. JONES, formerly supervising principal, Williamson Central School, Williamson, N. Y., has been elected district superintendent of schools, third district of Suffolk County, New York, succeeding LEONARD J. SMITH, who has resigned because of illness after having served in that capacity for twenty-two years.

RENO SHEARER has been appointed superintendent of schools, Lakeville, Ohio.

ARTHUR BONNEY is the new superintendent of schools, Wapato, Wash.

DR. CLAUDE MOORE FUESS has been named headmaster, Phillips Andover Academy, Andover, Mass. DOCTOR FUESS has been associated with the academy since 1908. He became acting headmaster in March upon the death of DR. CHARLES HENRY FORBES, who had functioned during the absence of DR. ALFRED E. STEARNS, who resigned recently because of ill health.

CORA LOUISE GRAVELY has been appointed principal, Greenacres School, Scarsdale, N. Y., to succeed PHYLLIS GRAVES, who becomes head of Chestnut Hill School, Chestnut Hill, Mass.

E. W. POWERS, Watseka, Ill., has been appointed superintendent of schools, Petersburg, Ill.

W. F. WARREN, principal, Durham High School, Durham, N. C., for the past seven years, has been elected superintendent of schools of that city, to succeed Frank M. MARTIN, who died a few months ago.

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In the Educational Field

DAVID R. SMITH is the new superintendent of schools, Delaware, Ohio, succeeding R. D. CONRAD.

DR. HAROLD WILLIS DODDS has been appointed president, Princeton University. DOCTOR DODDS, who is forty-four years old, is one of the youngest Princeton presidents. He joined the Princeton faculty in 1925, becoming a full professor two years later.

HAZEL V. THOMAS has been appointed superintendent of schools, Belmond, Ia.

J. E. HACKE, superintendent of schools, Claxton, Ga., for the past year, has resigned.

HOWARD WALTER, superintendent of schools, Eau Claire, Mich., for the past three years, has been named head of the school system, Baroda, Mich. His place at Eau Claire will be filled by KENNETH LANDSBERG.

PROFESSOR H. E. SIMMONS has been elected president, University of Akron, succeeding DOCTOR WILLIAM FREDERICK ZOOK, who resigned to become U. S. Commissioner of Education. PROFESSOR SIMMONS is a graduate of Akron, doing his graduate work later at the University of Pennsylvania. He is a specialist and has organized the first university course in the chemistry of rubber in the United States. PROFESSOR SIMMONS assumed his administrative duties on July 11.

JOSEPH J. WIGGINS, superintendent of schools, Kingman, Ohio, is now head of the school system, Lynchburg, Ohio, succeeding A. H. HATHAWAY.

DR. FRANK CODY has been unanimously reelected superintendent of schools, Detroit, for the customary three-year term. DOCTOR CODY succeeded to the superintendency in 1919 and has just completed his fourteenth year in office.

LOUIS W. ARBURN, formerly superintendent of schools, Oakland City, Ind., has been named superintendent of schools, Cambridge City, Ind. He will also have charge of the schools in Dublin and Pershing, Ind.

ROBERT GORSLINE has been elected superintendent of schools, Milford, Mich.

R. R. MILLER, head of the school system, Plymouth, Ohio, has been named superintendent of schools, Bloomville, Ohio, succeeding RALPH HATHAWAY, who will head the school system, Dalton, Ohio.

O. W. LENHARDT has been elected superintendent of schools, Lowellville, Ohio.

W. W. ANKENBRAND, formerly superintendent of schools, Rocky River, Ohio, has been elected head of the school system, Mansfield, Ohio, succeeding C. A. WALTZ.

H. K. HENDRICKSON has been elected superintendent of schools, Grandview, Ind., succeeding C. E. LEMME, who has resigned to accept the superintendency at Mackey, Ind.

PERLEY W. LANE, principal, Rye High School, Rye, N. Y., has resigned. MR. LANE joined the Rye High School in 1931 and organized the new school for its opening last September.

VIRGIL E. MAUGER is the new superintendent of schools, Pataskala, Ohio.

O. K. PROBASCO, superintendent of schools, Ohio Soldiers' and Sailors' Orphans' Home, Xenia, Ohio, has been appointed superintendent of schools, Mt. Victory, Ohio.

LEONARD T. BALL has been named superintendent of schools, Utica, Ohio, succeeding H. G. SPENCER, who has been appointed superintendent of schools, Granville, Ohio.

Students Hold Annual Meeting in Estes Park

The annual Estes Park Student Conference was held at Estes Park, Colo., June 7 to 17.

The University of Denver organization committee, which had full charge of the details of the summer retreat, was headed by Harry Ketchum and Evelyn Weinstein, representing the Y. M. C. A. and the Y. W. C. A., respectively. Fay Jackson and Kenneth Montgomery, secretaries of the campus Y. W. and Y. M. groups aided the student committee.

Many prominent speakers, drawn from over the nation, addressed and led the discussion groups. These included Dr. Bruce Curry, Union Theological Seminary of New York; Dr. W. O. Mendenhall, president, Friends University, Wichita, Kan.; Powers Hapgood, Columbia Conserve, Indianapolis; Paul Harris, National Council for the Prevention of War; Dr. C. H. Patterson, department of philosophy, University of Nebraska, and Dr. E. E. McNeil, psychiatrist, Colorado Psychopathic Hospital, Denver.

County Superintendents in Georgia Hold Conference

Cooperating with the Georgia state department of education and the University of Georgia summer school, Walter H. Gaumnitz, U. S. Office of Education specialist in rural school problems, recently addressed more than 100 county school superintendents meeting in Athens, Ga., for a six weeks' conference.

The superintendents attending the gathering were given six weeks' training free, and room and board for $15 to $20. They studied three undergraduate or graduate courses and attended the laboratory school and other departments of the university.

Northwestern University Seeks Precocious Students

Northwestern University's attempt to meet the needs of precocious students between the ages of thirteen and fifteen years will be extended this coming school year, it was announced recently. The scholarship of the four boys and two girls admitted in September, 1932, is considerably above that of the freshman average. The students are under the supervision of a faculty committee specially interested in this work.

High school principals are now being asked to send to the university the names of likely candidates for a second group of precocious students. The university will select those who manifest unusual potentialities for distinguished services in one of the arts, sciences or professions. By precocious, it was pointed out, is implied an intelligence quotient of more than 130, or unusually early mental development.